

## Description of courses

### **AED102 Educational Psychology I: Theories and Applications for Learning and Teaching**

AUs: 3, Prerequisites: NIL, Semester 1

This course provides the foundation for understanding the learner, their development and the psychology of learning. Key areas include: Understanding different aspects of pupil development and how these influence the teaching and learning processes. Psychosocial development, stages of moral development and the self-concept, and theories of intellectual development. Application of psychological principles and learning theories to classroom learning; understanding how pupils learn and how some pupils fail to learn; proactive approaches to motivate and enhance learning, develop creative and critical thinking and problem-solving skills.

### **AED104 ICT for Engaged Learning**

AUs: 2, Prerequisites: NIL, Semester 2

Information and Communications Technologies (ICT) are an important part of classroom environments in Singapore today. In line with MOE's *Second Masterplan for IT in Education*, this course adopts four major thrusts:

- a) working in teams to modify or create authentic interactive ICT-based learning resources for engaging learners
- b) creating and facilitating online collaborative learning environments
- c) managing ICT learning environments
- d) professional development by independent self-learning of innovative technologies

### **AED105 Critical Perspectives on Education**

AUs: 2, Prerequisites: NIL, Semester 1

This course takes a multi-disciplinary approach to expose student teachers to the broad concerns and challenges to contemporary educational thought and practices. It introduces key aspects of education to students and provides a platform to stimulate critical individual reflection and class discussion. Topics may include the philosophical foundations of education; concepts in education such as teaching, learning, moral education, citizenship education, and multicultural education; and current educational issues and challenges in Singapore, Asia and the rest of the world. In the course of exploring topics such as these, students will be encouraged to reflect on what it takes in terms of skills, knowledge, attitudes, and motivation to become a teacher.

### **AED201 The Social Context of Teaching and Learning**

AUs: 2, Prerequisites: NIL, Semester 1

This course provides student teachers with an introduction to the Singapore education system that they will be working in. They will need to know the functions of the school system in socializing citizens for economic, political and social roles in the context of a multi-ethnic and multicultural society. They will have the opportunity to understand the rationale of major education policies and new government initiatives that impact the work of school leaders, teachers, students and other stakeholders in order to achieve the Desired Outcomes of Education laid out by the Ministry of Education. At the same time, they will be made aware of the diverse and multiple roles that are played by teachers in the education system.

### **AED302 Educational Psychology II: Teaching and Managing Diverse Learners in the Classroom**

AUs: 3, Prerequisites: NIL, Semester 1

Pupils with diverse abilities and needs are increasingly found in mainstream schools in Singapore. Greater diversity among pupils requires pedagogical approaches that are inclusive of the learning needs of all and yet responsive to individual abilities. This course seeks to help student teachers to understand the characteristics and needs of diverse learners and how to provide optimal learning for all pupils. This course also seeks to help student teachers acquire and apply basic knowledge and skills in relation to creating conducive learning environment, managing and facilitating teaching and learning activities, and school/classroom discipline. The importance of the practice of proactive classroom management and positive teacher-student relationship will also be emphasized.

### **AED231 Diversity, Inclusivity and Reflective Practice**

AUs: 3, Prerequisites: NIL, Semester 2

This course situates teachers within the realities of their classrooms and the lives of their pupils in contemporary Singaporean society where diversity is increasingly recognized as the norm. The emphasis in the course is on student teachers learning the knowledge and skills to build classroom communities that are inclusive of and responsive to pupils of diverse needs and abilities. Student teachers will have the opportunity to become reflective practitioners in understanding and engaging with their own experiences in working with their pupils for the purpose of regenerating themselves and their classroom communities.

**AED232 Introduction to Counselling Psychology**

AUs: 2, Prerequisites: NIL, Semester 1

This course is intended to provide a general introduction to the field of counselling psychology. An overview of the philosophy, history, as well as basic theories and principles of counselling process and counselling skills will be presented. The role and function of the counsellors in the educational settings will be discussed. The characteristics of good counsellors, conditions for an effective counselling relationship and techniques of interviewing used especially to problems of educational, vocational, and personal counselling will be integrated into the course content. Emphasis will also be placed on multicultural counselling, career counselling, and research in counselling. The course is also designed to explore contemporary, legal, ethical and professional issues that influence the counselling profession, including confidentiality, assessment and working with students from diverse background.

**AED233 Critical Reasoning Skills for Effective Teaching**

AUs: 2, Prerequisites: NIL, Semester 1

The course will equip participants with a broad range of critical reasoning skills to develop the thinking and analytical abilities of their pupils in schools. Critical reasoning is based in part on mastery of basic rules of elementary logic, as well as practical reasoning skills. These skills are used for the analysis and evaluation of situations and arguments, as well as the formulation and articulation of good arguments and judgments. By learning how to formulate and articulate good arguments, participants will acquire an appreciation of how these critical thinking skills can be used to facilitate multi- and inter-disciplinary learning in their teaching. Working in groups, they will design innovative lesson plans that would help to stimulate interest in critical thinking and problem solving among their pupils.

**AED234 ICT- based Cognitive Tools for Engaged Learning**

AUs: 2, Prerequisites: NIL, Semester 2

The participants will be introduced to the concepts and theories of cognitive tools with their applications in international as well as local primary and secondary schools. When ICT tools are used as cognitive tools, they help to foster students' higher order thinking through collaborative construction of mental representations such as concept maps, models, websites or databases. The participants are expected to work in pairs or groups on a project employing one or two ICT-based cognitive tools. The participants are expected to contribute actively to the class and group project. The course assessment includes oral presentation and write-up of the group project as well as class participation.

**ACA201 Artistic Processes I**

AUs: 2, Prerequisites: NIL, Semester 1

This course introduces student teachers to the practices of art appreciation through critical studies as well as two-dimensional art activities that will increase their own understanding of the practical processes appropriate to primary art teaching. The course will also show the role that art processes play during childhood in fostering and encouraging thinking skills and creativity.

**ACA202 The Development of Children's Art and its Implications for Teaching**

AUs: 3, Prerequisites: NIL, Semester 2

This course will consist of introductions to classical and contemporary theories of children development in the visual arts. This course will help student teachers understand the various theoretical frameworks and how these underpin particular approaches to pedagogy and classroom practice. Student teachers will be aware of the values and philosophies that underpin the art curriculum in primary school. Student teachers will also learn how to design art experiences for young children which will promote and encourage intellectual and emotional development.

**ACA301 Artistic Processes II**

AUs: 2, Prerequisites: NIL, Semester 1

This course introduces student teachers to the practices of art appreciation through critical studies as well as three-dimensional art activities that will increase their own understanding of the practical processes appropriate to primary art teaching. The course will also show the role that art processes play during childhood in fostering and encouraging thinking skills and creativity.

**ACA302 Concepts and Practices in Art Education**

AUs: 3, Prerequisites: NIL, Semester 2

The course will look into how the teaching of art has evolved over history. Issues that arise from the various education philosophies and theories and their curriculum implications in art education will be discussed. The course will also examine how government policies and initiatives in the arts influence the teaching of art in local schools.

**ACA401 Visual Arts and New Media Technologies**

AUs: 2, Prerequisites: NIL, Semester 1

This course shows the role of art processes in new media applications. It describes recent contemporary art approaches as well as practical and pedagogical projects that serves as a method for introducing student teachers to Art and New Media.

**ACA402 Visual Arts Education in Museums and Galleries**

AUs: 2, Prerequisites: NIL, Semester 1

This course will explore the educational role of museums and galleries and its relationship to art education. The primary aim is to help student teachers conceptualise and develop innovative gallery-based resources for different levels of schooling. Fieldtrips will be conducted to the various local museums and galleries.

**ACA403 Children's Use and Organisation of Semiotic Systems**

AUs: 2, Prerequisites: NIL, Semester 2

This course will introduce student teachers to children's use and organisation of semiotic systems. Student teachers will learn how, in the child's earliest encounters with representational and expressive media, he/she realises the key principle of representation. This principle has been termed the 'dual nature' of symbols and signs and derives from the work of Vygotsky. Student teachers will learn that this dual function shows up especially clearly for children when they engage in art practices. Thus, children learn the foundations of representational and symbolic thought particularly well in art education. Student teachers will learn how, as the child moves from lower to upper primary school, so he/she makes his/her entry into the more formal semiotic systems of societies and cultures, including those used in his/her own society and culture. Pedagogical implications will be considered.

**ACC201 Teaching of Chinese Language 1**

AUs: 4, Prerequisites: NIL, Semester 2

This course aims to provide student teachers with the basic theories and concepts related to language and language teaching at primary level, with special reference to Chinese. Its objective is to enable student teachers to design their own lesson plans with confidence, backed by sound theoretic knowledge.

**ACC202 Teaching of Chinese Language 2**

AUs: 4, Prerequisites: NIL, Semester 2

This course discusses the aims, objectives and contents of existing Chinese Language curriculum. It also provides a systematic, practical, comprehensive overview of the different phases and activities involved in developing, managing and evaluating a sound, rational and effective Chinese Language programme. Key stages in the curriculum and material development processes are examined.

**ACC301 Teaching of Chinese Language 3**

AUs: 1, Prerequisites: NIL, Semester 2

This course focuses on the teaching of the written forms of words (*ci*), including the Chinese character (*zi*) and *hanyu pinyin*.

**ACC302 Teaching of Chinese Language 4**

AUs: 5, Prerequisites: NIL, Semester 2

This course aims to equip student teachers with techniques in the teaching of different language skills. Student teachers will acquire a comprehensive understanding of the various teaching methods and various practical techniques.

**ACC401 Teaching of Chinese Language 5**

AUs: 2, Prerequisites: NIL, Semester 1

The course aims to develop student teachers' teaching competency through a mock classroom teaching setting. Student teachers will be asked to deliver a CL lesson in a micro teaching room and be observed and later receive feedback and suggestions from peers and the lecturer.

**ACC402 Teaching of Chinese Language 6**

AUs: 2, Prerequisites: NIL, Semester 2

Student teachers will be introduced to basic concepts of Chinese language testing, the procedures of language testing, the effective ways of setting various types of questions and the cognitive levels involved.

**ACZ201 Teaching of Civics and Moral Education (Chinese) 1**

AUs: 4, Prerequisites: NIL, Semester 2

The historical background of moral education in Singapore schools. An overview of the primary school Civics and Moral Education programme. The selection of relevant materials for the teaching of moral education. The various approaches to the teaching of moral education. Hands-on experience and the preparation of teaching plans.

**ACZ301 Teaching of Civics and Moral Education (Chinese) 2**

AUs: 2, Prerequisites: NIL, Semester 2

This course examines the nature of children's literature as well as the use of children's literature in the teaching of civics and moral education as well as the Chinese language.

**ACZ401 Teaching of Civics and Moral Education (Chinese) 3**

AUs: 3, Prerequisites: NIL, Semester 1

This course deals with the use of IT in the teaching of Civics and Moral Education, as well as the Chinese language.

**ACE201 Teaching Reading and Writing 1**

AUs: 3, Prerequisites: NIL, Semester 2

This course will equip student teachers with the knowledge of processes and strategies to teach reading and writing at the lower primary level. Student teachers will learn how language is learnt at home and in school so that they will be able to select teaching strategies that are appropriate for multilingual classrooms. They will become familiar with the learning outcomes of the Primary English Language Syllabus, and methods of monitoring and assessing pupils' reading and writing. Student teachers will also learn how to use children's texts and textbooks as resources for teaching reading and writing.

**ACE301 Teaching Reading and Writing 2**

AUs: 3, Prerequisites: NIL, Semester 2

This course will focus on the strategies for teaching developing readers and writers at the upper primary level. Student teachers will learn strategies for teaching the reading and writing of fiction, non-fiction and multimodal texts, and learn how to integrate grammar teaching within these approaches. They will become familiar with the learning outcomes for the upper primary level as specified in the English Language syllabus. They will also learn methods of monitoring and assessing the reading and writing of upper primary pupils.

**ACE401 Teaching Oral Communication**

AUs: 2, Prerequisites: NIL, Semester 1

This course will focus on the teaching and assessment of children's oral communication skills. Student teachers will learn how to teach children to express themselves in individual presentations as well as to participate as members of a group. Student teachers will become familiar with the learning outcomes for oral communication specified in the English Language Syllabus and learn how to plan lessons using a range of resources to teach speaking, listening and viewing.

**ACE402 Teaching the Language Skills in the Upper Primary**

AUs: 2, Prerequisites: NIL, Semester 2

This course is for student teachers who wish to teach English at the upper primary level. They will learn how to teach language across the curriculum through strategies to teach reading, writing and oral skills for inquiry and research. Student teachers will also learn how to teach language for literary response and expression in order to encourage children's critical and creative thinking. In addition, student teachers will learn appropriate and alternative methods of assessment. Throughout the course, student teachers will be shown how to evaluate and select texts out of the complete range of genres and modes created for children for use in the upper primary multicultural classroom.

**ACM201 The Teaching and Learning of Primary Mathematics I**

AUs: 3, Prerequisites: NIL, Semester 2

Overview of the Singapore Primary Mathematics Curriculum; NE infusion; Preparation of Scheme of Work and Lesson Plans; Pedagogical Strategies and Psychological Theories; Teaching of Whole Numbers, Fractions, Decimals, Percentages, Ratio and Direct Proportion, Rate and Speed. [ICT and common pupils' errors will be dealt with in the teaching of various topics.]

**ACM301 The Teaching and Learning of Primary Mathematics II**

AUs: 3, Prerequisites: NIL, Semester 2

Teaching Problem Solving and Investigations; Mathematical Communication; Teaching of Geometry, Money and Measures, Mensuration, Graphical Representation and Statistics, Algebra. [ICT and common pupils' errors will be dealt with in the teaching of various topics.]

**ACM401 The Teaching and Learning of Primary Mathematics III**

AUs: 2, Prerequisites: NIL, Semester 1

This course covers two broad areas: (a) Various traditional assessment modes in Mathematics and the use of these modes in schools to assess pupil performance, in particular, the planning and construction of test items and (b) Practice of teaching skills, including catering for pupils of mixed abilities.

**ACM402 The Teaching and Learning of Primary Mathematics IV**

AUs: 2, Prerequisites: NIL, Semester 2

This course provides further pedagogical skills for those who will go deeper into teaching mathematics, especially at upper primary levels. Topics include: Games in Mathematics; Advanced use of ICT in mathematics teaching; Challenging Problems in Upper Primary Mathematics. Student teachers will also undertake Independent Study Topics which will enhance their teaching repertoire.

**ACI201 Music Curriculum I**

AUs: 3, Prerequisites: NIL, Semester 2

The application of musicianship skills towards analysing and diagnosing appropriate instructional goals, objectives, music teaching strategies and teaching materials for the primary school in Singapore. Foundational musicianship such as music and movement, elementary conducting and rehearsal techniques, improvisation/composition and voice studies is developed and explored in broader segments.

**ACI301 Music Curriculum II**

AUs: 3, Prerequisites: NIL, Semester 2

The course examines the music syllabus currently taught in Singapore lower primary schools, focusing on the rationale, background and philosophy of the syllabus together with practical experience of the musical material used towards managing and developing a general music programme. Pedagogies and practices that are suitable for primary 1, 2 and 3 levels will be explored to help student teachers plan and teach a holistic and integrated music curriculum.

**ACI401 Music Curriculum III**

AUs: 2, Prerequisites: NIL, Semester 1

Further examines and evaluates relevant teaching materials, methods and practices available for the teaching of upper primary music curriculum. Continue to explore different aspects of music teaching and learning processes to develop an understanding of the music of local and global cultures, creativity and critical thinking skills, current policies and initiatives by the Ministry and their impact on music syllabuses.

**ACI402 Music Curriculum IV**

AUs: 2, Prerequisites: NIL, Semester 2

The course focuses on curriculum planning as well as the management of musical co-curricular activities. It examines the rationale, philosophy, objectives, long- and mid-term goals of both classroom and non classroom music.

**APC101 Principles of Games**

AUs: 2, Prerequisites: NIL, Semester 1

This course is designed to introduce student teachers to the management strategies and theories underpinning the teaching of games. A broad spectrum of lead-up games will be presented covering four classifications of invasion, net/barrier, striking/fielding and target to provide a systematic and creative understanding of the transferability of principles. Game-sense will be developed through an eclectic conceptual development using elements of 'play practice', sport education, and tactical approaches.

**APC130 Badminton**

AUs: 2, Semester 2

Prerequisites: Student teachers are expected to have some basic skills before the start of the course. Instructors reserve the right to refuse admission to the course if the individual is deemed to be lacking in the basic skills.

Badminton is a game that volleys a shuttlecock across a net with rackets. In this course students will be introduced to a variety of methods in which beginners could acquire the basic volleying skills in badminton (such as the net shots, drop shots and drives). The aim of this course is to enable students to improve their volleying skills in badminton so that they are equipped with adequate badminton skills and learning strategies to enable them to teach badminton in school. The students will also learn the basic rules of the game so that they will be able to umpire games in the competitions.

**APC131 Volleyball**

AUs: 2, Semester 2

Prerequisites: Student teachers are expected to have some basic skills before the start of the course. Instructors reserve the right to refuse admission to the course if the individual is deemed to be lacking in the basic skills.

This course is designed to equip student teachers with the necessary basic skills and teaching points in order to teach volleyball in schools in Singapore. Special attention will be paid to acquiring the basic skills in volleyball i.e. forearm pass (dig), the face pass (volley), the serve (underarm and overhand), the spike and the block. Emphasis is placed on small-group activity and how to organize and conduct small-group activity in the school situation. Ample

practice, reinforced with sound teaching points, is given to the use of the basic skill/skills in small-group game situations. Information about the latest rules of the game and referee hand signals will also be incorporated into the course.

**APC201 Fitness and Conditioning**

AUs: 1, Prerequisites: NIL, Semester 2

This course is designed to help student teachers understand the theoretical and practical considerations regarding physical fitness and its development. Equal emphasis will be given to health related as well as performance related components of physical fitness. Various methods of training and testing for the components of physical fitness will be dealt with in practicals planning and writing training plans will be the concluding part of this course.

**APC230 Soccer**

AUs: 2, Semester 1

Prerequisites: Student teachers are expected to have some basic skills before the start of the course. Instructors reserve the right to refuse admission to the course if the individual is deemed to be lacking in the basic skills.

This course is designed to impart basic soccer skills and knowledge to student teachers for the purpose of teaching children in a school setting. The emphasis of the course is on providing ample opportunities to play the game as well as to gain better knowledge on how to teach students.

**APC231 Netball**

AUs: 2, Semester 1

Prerequisites: Student teachers are expected to have some basic skills before the start of the course. Instructors reserve the right to refuse admission to the course if the individual is deemed to be lacking in the basic skills.

The course is designed to impart basic netball skills and knowledge to student teachers for the purpose of teaching children in a school setting. The course will teach the basic skills of footwork, ball skills, goal shooting, and attacking/defending, as well as the application of these skills and game concepts/tactics in game play.

**APC232 Basketball**

AUs: 2, Semester 1

Prerequisites: Student teachers are expected to have some basic skills before the start of the course. Instructors reserve the right to refuse admission to the course if the individual is deemed to be lacking in the basic skills.

A variety of practical applications including: 1) individual on-ball and off-ball skill development, 2) team/game situations and 3) delivery of a basketball class using action-station and team-teaching methods are used to improve skills and knowledge in basketball. Students will be able to assimilate that knowledge (apply it into the Physical Education pedagogy context) in a fun learning-oriented environment.

**APC233 Rugby**

AUs: 2, Semester 1

Prerequisites: Student teachers are expected to have some basic skills before the start of the course. Instructors reserve the right to refuse admission to the course if the individual is deemed to be lacking in the basic skills.

The form of Sport Education incorporating Games Concept Approach, Inquiry Based Learning, Hellison's Levels of Responsibility, Situated Learning, Problem Solving and Decision Making, Independent and Self Paced Learning will be explored. Instructional characteristics will include: Festive atmosphere, Record keeping/accountability/statistical analysis/match reports, Consistent team with draft, Formal scheduled competition, Sport Education Roles, Modified Games. It is intended to combine Sport Education and Games Concept Approach as both programs provide a focus of student centeredness, and the development of games play through the early immersion of students into modified games situations. The focus is not on traditional development of sports skills rather on wider learning outcomes. Student teachers will have the opportunity to complete the International Rugby Union (IRB) Level 1, The Australia Rugby Union SMART Program and gain recognition by the Singapore Sports Council as registered coaches.

**APC234 Hockey**

AUs: 2, Semester 2

Prerequisites: Student teachers are expected to have some basic skills before the start of the course. Instructors reserve the right to refuse admission to the course if the individual is deemed to be lacking in the basic skills.

The game of Hockey, while inherently exciting, is usually poorly taught in schools and is consequently labeled a 'dangerous' game. The course aims to provide Physical Education teachers with the necessary skills and knowledge to present the game in a safe yet enjoyable manner to their students.

**APC235 Softball**

AUs: 2, Semester 2

Prerequisites: Student teachers are expected to have some basic skills before the start of the course. Instructors reserve the right to refuse admission to the course if the individual is deemed to be lacking in the basic skills.

This course is designed to impart basic softball skills and knowledge to student teachers for the purpose of teaching children in a school setting. The emphasis of the course is on providing ample opportunities to play the game as well as to learn how to demonstrate basic skills.

**APC236 Tennis**

AUs: 2, Semester 2

Prerequisites: Student teachers are expected to have some basic skills before the start of the course. Instructors reserve the right to refuse admission to the course if the individual is deemed to be lacking in the basic skills.

This course is designed to assist student teachers develop their basic tennis skills to a level of efficiency which will enable them to introduce and teach the games to beginners in schools.

**APC301 Instructional Methods in Physical Education**

AUs: 2, Prerequisites: NIL, Semester 2

This course covers the foundation skills of planning, teaching and evaluating physical education including: content selection and development; organization; instructional strategies; time on task, and student management systems; observation of student performance; and feedback provision. Course format will include lectures, discussions, practical experiences, group work, and microteaching in a neighbourhood school.

**APC331 Curriculum Gymnastics**

AUs: 2, Semester 1

Prerequisites: Student teachers are expected to have some basic skills before the start of the course. Instructors reserve the right to refuse admission to the course if the individual is deemed to be lacking in the basic skills.

This course will introduce the curriculum gymnastics to participants by means of thematic movement concepts based largely on floor activities and incorporating small and large apparatus. The aims of curriculum gymnastics will be espoused. The basic vocabulary of movement will be enhanced with emphasis on the cognitive and affective development through the appropriate use of pedagogical styles. In addition, basic floor, kipping and vaulting skills will be taught with a focus on a mechanical understanding of the techniques involved as well as developing appropriate progression and competent spotting and an understanding of the biomechanical principles involved. Advances in video and computer technology will be introduced to student teachers to enhance their ability to analyse movement qualitatively. Participants will enhance self-confidence to teach gymnastics in a safe and fun way.

**APC333 Dance**

AUs: 2, Semester 2

Prerequisites: Student teachers are expected to have some basic skills before the start of the course. Instructors reserve the right to refuse admission to the course if the individual is deemed to be lacking in the basic skills.

Teaching methods and resource for the planning and instruction of folk and line dances in the primary and secondary school curriculum. Student teachers will learn dances from different cultures reflecting a variety of styles and techniques. In addition, student teachers are introduced to the methods of leading creative dance experiences for children. The teaching methods used enable the design of lessons appropriate for a wide range of ages, interests and developmental stages. It also aims to give student teachers a chance to discover the creative juice in them and draw on the elements of dance to create their own dances.

**APC401 Instructional Strategies in Teaching of Physical Education**

AUs: 3, Prerequisites: NIL, Semester 1

This course, second in a series, builds on foundation pedagogical knowledge and skills appropriate for school students. It develops competence in a variety of teaching methods including inquiry, problem solving, group work and peer-teaching. Emphasis is placed on Mosston's teaching styles as well as concept approach to the teaching of games. The focus is on planning, teaching and evaluating situationally relevant lessons. Student teachers will be encouraged to refine their own teaching through systematic observation and analytic reflection. Course content will be presented through lectures, seminars, practical workshops, peer- and micro-teaching assignments in a neighbourhood school.

**ACS201 Curriculum and Pedagogy for Primary Science**

AUs: 3, Prerequisites: NIL, Semester 2

The nature of Science and scientific inquiry for young children will be the central guiding principles for learning in this course. Beginning teachers will gain an overview of the goals/objectives of the Primary Science curriculum from the analyses of syllabuses, textbooks, and other curricular materials with respect to present educational initiatives in Singapore. Drawing on contemporary learning theories and research findings, various methods and strategies in Primary Science will be taught through lectures and practical work.

**ACS301 Assessment Modes and Resource Management in Primary Science**

AUs: 3, Prerequisites: NIL, Semester 2

The course examines the underlying concepts and rationales in Primary Science assessment. Formal/non-formal methods of assessment as well as the construction and analyses of tests and practical work will be taught. Learners will also know how to use ICT, learning aids and other resources for effective Primary Science teaching and learning.

**ACS401 Innovations in Design and Practices for Primary Science**

AUs: 2, Prerequisites: NIL, Semester 1

Beginning teachers will critically reflect on their own planning, instruction and assessment practices from previous courses and during their teaching practicum. In particular, this course will introduce learners to children's ideas in Science, strategies for conceptual change, and designing investigative Science projects.

**ACS402 Current Trends, Issues and Challenges in Primary Science**

AUs: 2, Prerequisites: NIL, Semester 2

This course will focus in greater depth on current trends, issues and challenges in Primary Science. An attempt will be made to balance both international and local trends, issues and challenges. The emphasis in this course will be on the roles of a teacher as an action researcher and as a life-long learner. Discussion will focus on trends, issues and challenges involving innovations in practices on curriculum, instruction and assessment.

**ACL201 Teaching Social Studies in the Primary Classroom I**

AUs: 3, Prerequisites: NIL, Semester 2

This course aims to develop within student teachers an understanding of the nature, scope and goals of Social Studies in the context of the Singapore primary curriculum. It seeks to equip them with a variety of classroom-based teaching strategies that are relevant to the Singapore Primary Social Studies syllabus. The historical, geographical and economic concepts and skills in the syllabus will be examined and effective teaching strategies for Social Studies will be explored.

**ACL301 Teaching Social Studies in the Primary Classroom II**

AUs: 3, Prerequisites: NIL, Semester 2

This course aims to provide student teachers with further strategies for teaching the Singapore Primary Social Studies syllabus. There will be reinforcement of understanding and skills in planning effective units of instruction incorporating the use of inquiry and other pupil-centred strategies, explorations of the use of effective co-operative groupwork and the use of IT in enhancing learning in the classroom. The principles and practice of organizing and conducting fieldwork will also be covered

**ACL401 Managing Diversity in the Social Studies Classroom**

AUs: 2, Prerequisites: NIL, Semester 1

This course aims to provide student teachers with the knowledge and skills to use an inter-disciplinary approach to teaching Social Studies. The course will also provide them with the knowledge and skills to cater to diversity in the primary classroom.

**ACL402 Teaching Social Studies to Upper Primary Level School Children**

AUs: 2, Prerequisites: NIL, Semester 2

This course will equip student teachers with more advanced strategies to teach Social Studies at the upper primary levels. More opportunities are given to explore in greater depth, complex task design, advanced co-operative learning strategies and the use and development of inquiry and IT-related research skills.

**ACA321 The Development of Adolescent Art & its Implications for Teaching**

AUs: 3, Prerequisites: NIL, Semester 1

This course will consist of introductions to classical and contemporary theories of adolescent development and their implication in the visual arts education. This course will help student teachers understand the various theoretical frameworks and how these underpin particular approaches to pedagogy and classroom practice. Student teachers will be aware of the values and philosophies that underpin the art curriculum in secondary school. Student teachers will also learn how to design art experiences for adolescents which will promote and encourage intellectual and emotional development.

**ACA322 Concepts and Practices in Art Education**

AUs: 3, Prerequisites: NIL, Semester 2

The course will look into how the teaching of art has evolved over history. Issues that arise from the various education philosophies and theories and their curriculum implications in art education will be discussed. The course will also examine how government policies and initiatives in the arts influence the teaching of art in local schools.

**ACA421 Creativity, Thinking Skills and the Visual Arts**



AUs: 3, Prerequisites: NIL, Semester 1

This course explores the role art processes play during adolescence in fostering and encouraging the growth of thinking skills and creativity. This course examines recent research which shows that within adolescents' exploration of art media, adolescents form, in addition to aesthetic understandings, logicomathematical thinking and problem solving skills. Given the opportunities and appropriate teaching, adolescent's art serves as a template for many later kinds of creative thinking.

#### **ACA422 Visual Arts Education in Museums and Galleries**

AUs: 3, Prerequisites: NIL, Semester 2

This course will explore the educational role of museums and galleries and its relationship to art education. The primary aim is to help student teachers conceptualise and develop innovative gallery-based resources for different levels of schooling. Fieldtrips will be conducted to the various local museums and galleries.

#### **ACB321 Teaching of Biology I**

AUs: 3, Prerequisites: NIL, Semester 1

The course consists of three parts: Part 1: discusses some issues of the nature and philosophy of science, and the use of history for teaching biology. It also introduces student teachers to biologists belonging to the minority groups. Part 2: discusses alternative conceptions, difficulties and problems in various biology topics, and the use of concept maps for teaching biology. Part 3: covers the various learning theories, styles and approaches, multiple intelligences theory, and the use of analogies and word juxtapoz for teaching biology.

#### **ACB322 Teaching of Biology II**

AUs: 3, Prerequisites: NIL, Semester 2

This course examines the Biological Sciences curriculum in Singapore Schools and how to plan lessons for pupils of different ability ranges and levels in secondary schools. A variety of teaching/learning strategies, are thinking/study skills and co-operative learning strategies are discussed. The management and control of pupil behaviour, safety practices in science, IT, its applications and resources for Biology teaching from the Internet, are explored.

#### **ACB421 Teaching of Biology III**

AUs: 3, Prerequisites: NIL, Semester 1

This course focuses on issues on the what and why of testing in science. Test construction, marking of examination scripts, and its implications for teachers and teaching styles are addressed. Alternative assessments of practical skills, the setting of tasks for Science Practical Assessment, crafting rubrics for teachers' practical assessment and marking of practical work are also considered. The role of resource centres for field trips, planning and conducting field trips are also featured.

#### **ACB422 Teaching of Biology IV**

AUs: 3, Prerequisites: NIL, Semester 2

This course focuses on current trends, issues, and challenges in biological education. It will include problems, practices and innovations in curriculum, instruction and assessment. The course will provide students with an understanding of relevant issues to help them become more reflective practitioners.

#### **ACY321 The Teaching of Chemistry I**

AUs: 3, Prerequisites: NIL, Semester 1

Basic issues, concepts and principles in chemical education. Psychological principles crucial to the teaching and learning of chemistry. Issues related to the organisation and implementation of the science/chemistry curriculum. The integration of IT into the chemistry curriculum. The planning and teaching strategies, and resources crucial for the effective teaching of chemistry that includes unit and lesson planning, the inquiry approach, constructivist approach, problem-solving, expository teaching and demonstrations.

#### **ACY322 The Teaching of Chemistry II**

AUs: 3, Prerequisites: NIL, Semester 2

Purposes of evaluation, tables of specifications, test construction, administration, marking, and analysis; interpretation of test scores. Alternative assessment modes such as open-book tests, take-home examinations, concept mapping, assessment of attitudes and values, and project work will be considered. The management, assessment and moderation of SPA (school-based practical assessment). The management of the chemistry laboratory and laboratory safety.

#### **ACY421 The Teaching of Chemistry III**

AUs: 3, Prerequisites: NIL, Semester 1

Micro-teaching provides opportunities to identify and practise basic teaching skills such as opening and closing a lesson, explaining concepts, questioning and responding to pupils. Student teachers practise the relevant skills through mini-presentations on selected chemistry topics at the secondary level. The presentations are reviewed and critiqued by peers and the tutor.

**ACY422 The Teaching of Chemistry IV**

AUs: 3, Prerequisites: NIL, Semester 2

This course will focus in greater depth on current trends, issues and challenges in chemical education. An attempt will be made to balance both international and local trends, issues and challenges. There will also be laboratory work on the use of dataloggers in teaching, practical work and inquiry science.

**ACU321 Elements of Drama**

AUs: 3, Prerequisites: NIL, Semester 1

This course introduces student teachers to the key features of dramatic forms. Theory is combined with practice in this interactive and developmental approach to drama. Student teachers will experience and come to understand the processes intrinsic to understanding and creating dramatic works.

**ACU322 Drama and Theatre in Education**

AUs: 3, Prerequisites: NIL, Semester 2

This course introduces key concepts and developments in the practice of drama as pedagogy. In varying contexts drama has been used for: artistic communication, personal development, meaning-making and empowerment. Student teachers will come to understand a range of philosophical viewpoints relating to the educative purpose and power of drama and how they are realized in practice.

**ACU421 Theatre for Young People (TYP)**

AUs: 3, Prerequisites: NIL, Semester 1

This is a practical course in Young People's Theatre. Topics will include Children's Theatre, Youth Theatre and Theatre for Youth. The course examines current issues in the philosophy and practice of TYP. Student teachers will work through a playbuilding process to devise material suitable for the Singapore school context.

**ACU422 Process Drama**

AUs: 3, Prerequisites: NIL, Semester 2

This course employs drama as an investigative or problem-solving method. Student teachers will develop understanding of the particular structural requirements of process dramas and the learning opportunities they afford. Process drama enhances learning in the cognitive, aesthetic and affective domains.

**ACE321 Teaching of English at the Secondary Level: Oral Communication**

AUs: 3, Prerequisites: NIL, Semester 1

This course begins the process by which student teachers learn to teach the English language at the secondary level. It develops foundational knowledge and skills to teach oral communication (listening and speaking) at this level. The course encourages the exploration, critique and adaptation of teaching approaches, strategies and resources to meet pupils' oral communication needs.

**ACE322 Teaching of English at the Secondary Level: Reading**

AUs: 3, Prerequisites: NIL, Semester 2

This course provides the strategies and approaches to the teaching of reading in secondary school classrooms. It also provides an understanding of the critical place that reading plays in a language classroom through reflective practice to develop reading literacy in adolescents. Through process-oriented, collaborative work, student teachers will receive practice in designing reading-focus lessons for secondary school classrooms. On-going pedagogical practice and reflection on the critical implementation issues about the teaching of reading will foster cognizance to meet the challenges of different learner abilities in local classrooms.

**ACE421 Teaching Grammar at the Secondary Level**

AUs: 3, Prerequisites: NIL, Semester 1

This course will enable English Language student teachers to develop expertise in teaching grammar at the secondary level. Student teachers will learn how to identify grammar in syllabus text types and current textbooks and design appropriate teaching activities within the wider context of teaching the other language skills within a progressive, spiralled syllabus. The course engages student teachers through presentations and demonstrations of grammar-teaching strategies, and encourages their development, critique and adaptation of grammar-teaching tasks and resources.

**ACE422 Teaching of English at the Secondary Level: Writing**

AUs: 3, Prerequisites: NIL, Semester 2

This course focuses on teaching writing at the secondary level. It adopts an integrated approach to equip student teachers with a range of strategies for teaching and assessing writing supported by an understanding of theory which allows for the application of skills and techniques in the secondary classroom. It is designed to enable student teachers to integrate writing with the other language skills of listening/speaking, reading, grammar and vocabulary across the curriculum. It encourages exploration, critique and adaptation of teaching resources and strategies directed by current national initiatives and trends in language teaching with the aim of developing classroom practitioners who are self-reflective, informed, conscious and confident of themselves as writers first, and second, as teachers of writing.

#### **ACR321 Teaching Prose**

AUs: 3, Prerequisites: NIL, Semester 1

This course starts by giving a broad overview of the principles, aims and objectives, and general methodology of teaching Literature as a subject. It considers the assumptions underlying different approaches to Literature teaching, as well as examines the local Literature curriculum. Issues such as text selection, canon-formation and problems of representation will also be considered. The course will then consider the various approaches and techniques for teaching prose fiction like the short story and the novel. It covers the selection of appropriate material as well as teaching strategies for the different elements of narrative and style. It will pay attention to the links between reading and writing while considering teaching prose for literary development, cultural literacy, and creative and critical thinking.

#### **ACR322 Teaching Poetry**

AUs: 3, Prerequisites: NIL, Semester 2

This course introduces approaches and techniques for teaching poetry. It covers the selection of appropriate material and teaching ideas for the different elements of poetry. It will also pay attention to the links between reading and writing about poetry while considering the teaching of poetry for literary development, cultural literacy, and creative and critical thinking.

#### **ACR421 Teaching Drama**

AUs: 3, Prerequisites: NIL, Semester 1

This course introduces approaches and techniques for teaching drama. It covers the selection of appropriate material as well as teaching strategies for the different elements of drama. It also pays attention to the links between reading, performance and writing, while considering the teaching of drama for literary development, cultural literacy, and creative and critical thinking.

#### **ACR422 Literature Assessment**

AUs: 3, Prerequisites: NIL, Semester 2

This course considers the principles of assessment and the various ways of assessing Literature—through traditional pen-and-paper assessment, extended writing, project work, and portfolio-keeping. Student teachers will have the opportunity to practice marking Literature essays as well as to set and critique different questions, tests and exam papers.

#### **ACQ321 Family and Consumer Sciences Curriculum**

AUs: 3, Prerequisites: NIL, Semester 1

The focus of this course is on the nature, historical, and philosophical base of family and consumer sciences; integrative focus of disciplines and areas of specializations; the rationale and objectives of teaching family and consumer sciences; curriculum development and planning in family and consumer sciences programmes in school settings.

#### **ACQ322 Introduction to Family and Consumer Sciences Teaching**

AUs: 3, Prerequisites: NIL, Semester 2

The focus of this course is on the principles of teaching and learning applied to family and consumer sciences content. Instructional strategies appropriate for formal and informal settings including specific strategies for diverse audiences will be discussed. Student teachers will develop teaching skills through their participation in simulated teaching activities with emphasis on the management of strategies. Innovative use of instructional methods in relation to current trends is also highlighted.

#### **ACQ421 Evaluation in Family and Consumer Sciences Teaching**

AUs: 3, Prerequisites: NIL, Semester 1

The focus of this course is on the principles of evaluation, framework for evaluation, procedures for appraising students' progress in the attainment of objectives. Content includes the construction of a range of evaluation instruments related to family and consumer sciences programmes in schools.

**ACQ422 Trends in Family and Consumer Sciences Education**

AUs: 3, Prerequisites: NIL, Semester 2

The focus of this course is on topical concerns and current issues of teacher and school and its impact on the curriculum, instruction and assessment of family and consumer sciences in schools. Student teachers will learn the necessary knowledge and skills that will enable them to carry out small scale research studies in a relevant cognate area. Each student teacher will undertake a project in a cognate area of family and consumer sciences education in school.

**ACG321 Planning for Geography Teaching**

AUs: 3, Prerequisites: NIL, Semester 1

This course lays the foundation for student teachers to teach Geography for understanding. It provides an overview of the rationale and evolution of teaching and learning of Geography. Student teachers will develop an in-depth understanding of the Geography discipline by exploring the geographical concepts. They will also explore the diversity of the learners in this planning stage.

**ACG322 Classroom-based Teaching Methods**

AUs: 3, Prerequisites: NIL, Semester 2

The focus of this course is to help student teachers acquire teaching approaches and strategies to teach Geography for deep understanding. Student teachers will develop an understanding of inquiry learning and concept-based approaches and design unit and lesson plans using these two approaches.

**ACG421 Field-based Teaching Strategies & Assessment in Teaching Geography**

AUs: 3, Prerequisites: NIL, Semester 1

This course emphasizes the importance of fieldwork in the effective teaching and learning of geography. Participants will be given opportunities to explore and discuss issues in the planning and execution of fieldtrips in the school curriculum. Consideration will also be given to the assessment of learning in geography, both during and after fieldwork, as well as in regular classroom interaction.

**ACG422 Teaching Social Studies to Secondary School Students**

AUs: 3, Prerequisites: NIL, Semester 2

This course aims to provide student teachers with an understanding of the nature, scope and goals of social studies education in Singapore. The course will provide opportunities for student teachers to reflect on issues related to the secondary social studies syllabus content, and acquire an understanding of these issues. It also seeks to equip student teachers with a variety of classroom-based teaching strategies that are appropriate for the teaching of concepts, content, skills and values to differentiated learners in the social studies classroom. Student teachers will be exposed to these strategies through experiential learning. The tutorials will also provide opportunities for student teachers to reflect on critical issues of social studies teaching, discuss and practice some of teaching strategies, and design and develop unit and lesson plans in a cooperative learning environment. Student teachers will have opportunities to set source-based questions and structured-essay questions, devise the mark schemes and mark answer scripts.

**ACH321 Teaching of Secondary History and Social Studies I**

AUs: 3, Prerequisites: NIL, Semester 1

This course introduces student teachers to the teaching and learning of History and Social Studies at the secondary school level. The course will give student teachers an insight into the nature and purpose of History and Social Studies in schools, and allow them to explore the curriculum as well as examine the issues and key questions that are central to these disciplines. This course is designed to equip student teachers with teaching strategies that may enhance the learning of History and Social Studies in the classroom, and provide them with ample opportunities to plan for teaching.

**ACH322 Teaching for Historical Understanding**

AUs: 3, Prerequisites: NIL, Semester 2

The general assumption that a sturdy understanding of the past may be acquired by a process of committing historical narratives (events, details, names and dates) to memory may no longer be tenable. An increasing body of research on History and Social Studies education demonstrates that learning History, for the purpose of deeper understanding, involves not only the study of such narratives but also the acquisition of a set of discipline-specific cognitive strategies that students can use to better learn and understand the past. Teaching for historical understanding aspires to equip students not only with historical content but also with the necessary tools that can enable them to explore, interpret and understand the past, as a part of learning to think historically. This course introduces student teachers to the challenging and complex undertaking of teaching for historical understanding. Student teachers will be exposed to selected concepts that underpin the historical discipline, the key skills and

processes that are involved in historical writing & investigation, as well as the importance of sources as the primary means of historical inquiry.

**ACH421 Teaching and Learning of Secondary History and Social Studies II**

AUs: 3, Prerequisites: NIL, Semester 1

This course seeks to expose student teachers to an interesting and challenging strategy in the teaching of History and Social Studies by taking them out of the classroom. The course will focus on how field trips can be used to enhance pupils' learning and increase their knowledge of a subject through active hands-on experience with the rich resources within the local community. This course is designed to equip student teachers with the ability to plan, organize and conduct field trips to selected sites in Singapore. Not only will student teachers discover valuable information about the sites visited, they will themselves be able to organize such trips to enhance their pupils' learning experiences and awareness of their own culture and heritage.

**ACH422 Assessment and Evaluation in Secondary History and Social Studies**

AUs: 3, Prerequisites: NIL, Semester 2

This course seeks to expose student teachers to key issues involved in the assessment and evaluation of History and Social Studies in secondary schools. Generally, the course aims at enabling student teachers to conduct assessment in these subjects, with attention given to the practical aspects of how to assess what students learn from being taught History and Social Studies. In line with the objectives and examination requirements of the current syllabus, the main emphasis of the course will be on the ways source materials can be used to meet assessment demands of the two subjects. For this purpose, the course has been designed to give student teachers ample opportunities at setting source-based and structured essay questions, as well as giving them adequate practice at both devising marking schemes and the marking of answer scripts. Student teachers will also be introduced to formative assessments and how these may be used in schools to evaluate students' learning.

**ACD221 The Teaching of Malay Language 1 (Sec)**

AUs: 3, Prerequisites: NIL, Semester 2

The principles of language learning. Various theories and general approaches to language teaching and learning. The objectives and content of teaching Malay language curriculum in schools. Planning a Malay language lesson. Integrating language skills such as listening, speaking, reading and writing. The teaching of grammar and vocabulary.

**ACD321 The Teaching of Malay Language 2 (Sec)**

AUs: 3, Prerequisites: NIL, Semester 1

The course deals with the processes of listening and speaking skill. The learning and teaching of oral, listening and speaking skills in language classroom. The reading process and development of reading skills. The strategies used to teach reading and comprehension skills.

**ACD322 The Teaching of Malay Language 3 (Sec)**

AUs: 3, Prerequisites: NIL, Semester 2

Teaching of writing. Understanding the writing process. Introduction to the salient principles for the teaching of writing. Creative methods to the teaching of writing such as process writing and genre writing.

**ACD421 The Teaching of Malay Language 4 (Sec)**

AUs: 3, Prerequisites: NIL, Semester 1

Malay Language testing and assessments. The basic concepts, the construction and administration of test items, item review and analysis, discrete item test and integrative tests, and skills in developing Malay language tests and assessments at secondary school level. The crafting of examination papers, including marking schemes as well as hands-on practice on marking. The introduction of authentic and alternative assessments, including IPW and others, rubric designs and its application in classroom settings with students of differing academic abilities in mind. Creative and critical thinking in assessments will be emphasized.

**ACF321 The Teaching of Malay Literature 1**

AUs: 3, Prerequisites: NIL, Semester 1

The aims and objectives of teaching literature and the place of literature in the curriculum. An overview of the developments of modern Malay and Indonesian literature. The general methods and techniques of teaching literature. The knowledge and skills of teaching modern Malay and Indonesian novel, short story, poetry and drama/play at secondary schools.

**ACF322 The Teaching of Malay Literature 2**

AUs: 3, Prerequisites: NIL, Semester 2

The course prepares the pre-service student teachers to teach traditional Malay literature in secondary schools. An overview of the main features and developments of traditional Malay literature. The knowledge and skills of the

teaching of traditional Malay prose and poetry. The principles, methods and techniques of teaching selected classical genres and texts.

**ACF421 The Teaching of Malay Literature 3**

AUs: 3, Prerequisites: NIL, Semester 1

This course is a continuation of earlier courses. It attempts to provide a holistic and integrative approach in the teaching of Malay literature in school. The teaching of modern and traditional literature are integrated in the formal classroom as well as informal learning environment within and beyond the school vicinity. Participants are trained to explore and design creative literary programmes and performances. Special skill training in utilizing and integrating multimedia and multi artistic forms to express meanings in literary texts will be incorporated.

**ACF422 The Teaching of Malay Literature 4**

AUs: 3, Prerequisites: NIL, Semester 2

The principles, methods and techniques of teaching selected classical genres and modern texts. Appreciation, evaluation and testing of traditional and modern literature will be the main focus of this course.

**ACM321 Teaching and Learning Mathematics I**

AUs: 3, Prerequisites: NIL, Semester 1

The main objective of this course is to equip student teachers with a working knowledge of basic teaching principles and a comprehensive knowledge of the curriculum. The content of this course includes: aims and objectives of mathematics education; mathematics curriculum in Singapore; problem solving; presentation of mathematical ideas in a whole class instructional setting; teaching of mathematics topics – Arithmetic and Algebra.

**ACM322 Teaching and Learning Mathematics II**

AUs: 3, Prerequisites: NIL, Semester 2

This course is designed to equip student teachers with an understanding of the theories of learning that inform instruction and practical classroom skills and preparation based on such theories. The content of this course includes: learning theories in mathematics; task analysis; lesson planning; role of ICT in mathematics education; teaching of mathematics topics – Functions and Graphs, Statistics, Probability, Sets and Matrices.

**ACM421 Teaching and Learning Mathematics III**

AUs: 3, Prerequisites: NIL, Semester 1

This course seeks to help student teachers understand the major issues in teaching secondary mathematics and to further extend their knowledge of pedagogy to include more innovative teaching strategies. The content of this course includes: current issues in mathematics education; design of investigative and enrichment activities; hands-on learning using dynamic geometry software; teaching of mathematics topics – Mensuration, Geometry, Trigonometry and Vectors.

**ACM422 Teaching and Learning Mathematics IV**

AUs: 3, Prerequisites: NIL, Semester 2

This course seeks to help student teachers understand the fundamentals of assessment in teaching secondary mathematics and to develop their pedagogical content knowledge for the teaching of Higher Algebra and Calculus.

**ACI321 General Musicianship I**

AUs: 3, Prerequisites: NIL, Semester 1

This course seeks to establish a foundation in musicianship skills (aural-training, sight-singing, keyboard skills, functional music theory and analysis) for the music classroom via the activities of creating, performing and responding. This course is to help student teachers develop essential functional musical concepts and skills that are required as a classroom music teacher with a view to cultivating performance and listening skills.

**ACI322 General Musicianship II**

AUs: 3, Prerequisites: NIL, Semester 2

This course seeks to apply these skills (aural-training, sight-singing, keyboard skills, functional music theory and analysis) to music teaching and learning for the classroom. This course is designed to prepare student teachers to formulate instructional goals and organize teaching strategies, and to utilize a variety of techniques and materials for the secondary classroom.

**ACI421 General Musicianship III**

AUs: 3, Prerequisites: NIL, Semester 1

This course seeks to further reinforce and sharpen their aural perception, sight singing and keyboard skills and analytical understanding to fulfil the task of a music specialist in teaching and learning for both classroom and co-curricular music settings, managing classroom music activities and development of a secondary music programme.

**ACI422 The Secondary School Music Syllabus**

AUs: 3, Prerequisites: NIL, Semester 2

This course involves a thorough survey and discussion of the Secondary School Music Syllabus in relation to practices and policies outlined by the Ministry of Education. This course aims to familiarize student teachers with the requirements and guidelines defined by MOE's current Secondary Music Syllabus, to enable them to develop a congruent, comprehensive, developmental programme of music education in secondary schools. The teaching of music in the secondary school with particular reference to the syllabus as it is in operation in Singapore schools.

**ACP321 Teaching of Physics I**

AUs: 3, Prerequisites: NIL, Semester 1

The course attempts to provide student teachers in initial teacher education programmes with an understanding of school pupils they will be taking charge of. To improve their teaching efforts, they will be exposed to individual differences in learning, diagnosis, and strategies to deal with different ability groups as represented in the Gifted, Express, Normal (Academic) and Normal (Technical) Streams. Special effort will be devoted to helping the student teachers deal with critical incidents. Lectures on showmanship, creativity, thinking skills, inquiry, telling and explaining will be included as the key elements in support of good teaching.

**ACP322 Teaching of Physics II**

AUs: 3, Prerequisites: NIL, Semester 2

This course will introduce student teachers to physics curriculum development with respect to international and local trends. The infusion of thinking, the meaningful integration of ICT and the linkage to national education, innovation and enterprise spirit will be given due attention and focus. An understanding of the constructivist-inquiry approach, investigative problem-solving, meaningful demonstration and purposeful deductive inquiry will facilitate the teaching and learning of physics. This course will also address alternative conceptions of students on various physics topics. Activities based on the physics curriculum and involving experiences that are hands-on, minds-on and experiential will be introduced to model how conceptual development and change can be facilitated.

**ACP421 Teaching of Physics III**

AUs: 3, Prerequisites: NIL, Semester

Two important aspects of Physics teaching; namely, that of resources management and evaluation will be covered in this course. Resources include those available to the classroom teacher, both within and outside school. Safety in science laboratories, the role of practical work and its importance as an integral part of physics education will also be discussed. Of special mention will be the recent School based Science Practical Assessment (SPA). Other aspects include the setting, marking and analyzing of physics examination papers and how to give constructive feedback to students and parents.

**ACP422 Teaching of Physics IV**

AUs: 3, Prerequisites: NIL, Semester 2

Teaching and learning in our classroom can be improved if teachers take cognizance of the findings of studies of different aspects of the teaching-learning process. There is therefore a need to equip student teachers with sufficient knowledge and skills to read and interpret these findings as well as carry out small scale studies in their science area. The course provides student teachers with an understanding of issues to help them in their classroom practices, be it curriculum, instruction or assessment. This will better prepare them as life-long learners.

**APC121 Principles of Games**

AUs: 2, Prerequisites: NIL, Semester 1

This course is designed to introduce student teachers to the management strategies and theories underpinning the teaching of games. A broad spectrum of lead-up games will be presented covering four classifications of invasion, net/barrier, striking/fielding and target to provide a systematic and creative understanding of the transferability of principles. Game-sense will be developed through an eclectic conceptual development using elements of 'play practice', sport education, and tactical approaches.

**APC141 Badminton**

AUs: 2, Prerequisites: NIL, Semester 2

Badminton is a game that volleys a shuttlecock across a net with rackets. In this course student teachers will be introduced to a variety of methods in which beginners could acquire the basic volleying skills in badminton (such as the net shots, drop shots and drives). The aim of this course is to enable student teachers to improve their volleying skills in badminton so that they are equipped with adequate badminton skills and learning strategies to enable them

to teach badminton in school. The student teachers will also learn the basic rules of the game so that they will be able to umpire games in the competitions.

**APC142 Volleyball**

AUs: 2, Prerequisites: NIL, Semester 2

This course is designed to equip student teachers with the necessary basic skills and teaching points in order to teach volleyball in secondary schools in Singapore. Special attention will be paid to acquiring the basic skills in volleyball i.e. forearm pass (dig), the face pass (volley), the serve (underarm and overhand), the spike and the block. Emphasis is placed on small-group activity and how to organize and conduct small-group activity in the school situation. Ample practice, reinforced with sound teaching points, is given to the use of the basic skill/skills in small-group game situations. Information about the latest rules of the game and referee hand signals will also be incorporated into the course.

**APC221 Fitness & Conditioning**

AUs: 1, Prerequisites: NIL, Semester 2

This course is designed to help students understand the theoretical and practical considerations regarding physical fitness and its development. Equal emphasis will be given to health related as well as performance related components of physical fitness. Various methods of training and testing for the components of physical fitness will be dealt with in practicals. Planning and writing training plans will be the concluding part of this course.

**APC241 Soccer**

AUs: 2, Prerequisites: NIL, Semester 1

This course is designed to impart basic soccer skills and knowledge to student teachers for the purpose of teaching children in a school setting. The emphasis of the course is on providing ample opportunities to play the game as well as to gain better knowledge on how to teach students.

**APC242 Netball**

AUs: 2, Prerequisites: NIL, Semester 1

The course is designed to impart basic netball skills and knowledge to teachers for the purpose of teaching children in a school setting. The course will teach the basic skills of footwork, ball skills, goal shooting, and attacking/defending, as well as the application of these skills and game concepts/tactics in game play.

**APC243 Rugby**

AUs: 2, Prerequisites: NIL, Semester 1

The form of Sport Education incorporating Games Concept Approach, Inquiry Based Learning, Hellison's Levels of Responsibility, Situated Learning, Problem Solving and Decision Making, Independent and Self Paced Learning will be explored. Instructional characteristics will include: Festive atmosphere, Record keeping/ accountability/ statistical analysis/match reports, Consistent team with draft, Formal scheduled competition, Sport Education Roles, Modified Games. It is intended to combine Sport Education and Games Concept Approach as both programs provide a focus of student centeredness, and the development of games play through the early immersion of students into modified games situations. The focus is not on traditional development of sports skills rather on wider learning outcomes. Student teachers will have the opportunity to complete the International Rugby Union (IRB) Level 1, The Australia Rugby Union SMART Program and gain recognition by the Singapore Sports Council as registered coaches.

**APC244 Basketball**

AUs: 2, Prerequisites: NIL, Semester 1

A variety of practical applications including: 1) individual on-ball and off-ball skill development, 2) team/game situations and 3) delivery of a basketball class using action-station and team-teaching methods are used to improve skills and knowledge in basketball. Student teachers will be able to assimilate that knowledge (apply it into the Physical Education pedagogy context) in a fun learning-oriented environment.

**APC245 Hockey**

AUs: 2, Prerequisites: NIL, Semester 2

The game of hockey, while inherently exciting, is usually poorly taught in schools and is consequently labelled a dangerous game. The course aims to provide Physical Education teachers with the necessary skills and knowledge to present the game in a safe, yet enjoyable manner to their students.

**APC246 Softball**



AUs: 2, Prerequisites: NIL, Semester 2

This course is designed to impart basic softball skills and knowledge to student teachers for the purpose of teaching children in a school setting. The emphasis of the course is on providing ample opportunities to play the game as well as to learn how to demonstrate basic skills.

#### **APC247 Tennis**

AUs: 2, Prerequisites: NIL, Semester 2

This course is designed to assist student teachers develop their basic tennis skills to a level of efficiency which will enable them to introduce and teach the games to beginners in schools.

#### **APC321 Instructional Methods in Physical Education**

AUs: 2, Prerequisites: NIL, Semester 2

This course covers the foundation skills of planning, teaching and evaluating physical education including: content selection and development; organization; instructional strategies; time on task, and student management systems; observation of student performance; and feedback provision. Course format will include lectures, discussions, practical experiences, group work, and microteaching in a neighbourhood school.

#### **APC341 Curriculum Gymnastics**

AUs: 2, Prerequisites: NIL, Semester 1

This course will introduce the curriculum gymnastics to participants by means of thematic movement concepts based largely on floor activities and incorporating small and large apparatus. The aims of curriculum gymnastics will be espoused. The basic vocabulary of movement will be enhanced with emphasis on the cognitive and affective development through the appropriate use of pedagogical styles. In addition, basic floor, kipping and vaulting skills will be taught with a focus on a mechanical understanding of the techniques involved as well as developing appropriate progression and competent spotting and an understanding of the biomechanical principles involved. Advances in video and computer technology will be introduced to student teachers to enhance their ability to analyse movement qualitatively. Participants will enhance self-confidence to teach gymnastics in a safe and fun way.

#### **APC342 Swimming**

AUs: 2, Prerequisites: NIL, Semester 1

This course aims to develop introductory teaching skills and stroke competencies in swimming. Student teachers will learn how to teach swimming to beginners by employing basic learn-to-swim and lead-up activities. Student teachers will be expected to practise, acquire and, finally, demonstrate correct and efficient technique in at least three out of the four swimming strokes (front crawl, breaststroke, backstroke and butterfly). Other related skills of swimming such as floating, diving, and water games will also be introduced. Safety in and around swimming pools (and other aquatic environments) will be emphasized in this course. This course is primarily activity-based and hence, participation is required. Student teachers will be required to be in proper swimming attire for each lesson.

#### **APC343 Dance**

AUs: 2, Prerequisites: NIL, Semester 2

Teaching methods and resource for the planning and instruction of folk and line dances in the primary and secondary school curriculum. Student teachers will learn dances from different cultures reflecting a variety of styles and techniques. In addition, student teachers are introduced to the methods of leading creative dance experiences for children. The teaching methods used enable the design of lessons appropriate for a wide range of ages, interests and developmental stages. It also aims to give student teachers a chance to discover the creative juice in them and derive on the elements of dance to create their own dances.

#### **APC344 Track and Field**

AUs: 2, Prerequisites: NIL, Semester 2

This course is designed to equip teachers with the necessary knowledge and skills to teach selected Track and Field Events. Biomechanical, physiological, anatomical, pedagogical and social issues and concepts will be used to show the link between the sciences and Track and Field events. The benefits of track and field as a vehicle for fun and fitness, as well as growth and development will be emphasised. In the second part of this course, basic coaching of Track & Field events will be emphasized so as to enable teachers to take charge of Track & Field as a CCA in the schools.

#### **APC421 Instructional Strategies in Teaching of Physical Education**

AUs: 3, Prerequisites: NIL, Semester 1

This course, second in a series, builds on foundation pedagogical knowledge and skills appropriate for school students. It develops competence in a variety of teaching methods including inquiry, problem solving, group work and peer-teaching. Emphasis is placed on Mosston's teaching styles as well as concept approach to the teaching of games. The focus is on planning, teaching and evaluating situationally relevant lessons. Student teachers will be

encouraged to refine their own teaching through systematic observation and analytic reflection. Course content will be presented through lectures, seminars, practical workshops, peer- and micro-teaching assignments in a neighbourhood school.

#### **ACW401 Teaching Lower Primary 1**

AUs: 4, Semester 1

Prerequisites: Must have taken first course before 2<sup>nd</sup> course and must have taken CS: English and CS: Mathematics (Option B)

The first course in the Primary (Option B) strand seeks to prepare student teachers to use a more holistic and interactive approach towards teaching and learning. It will equip student teachers with the knowledge and skills to teach a developmentally appropriate integrated curriculum for children at the lower primary level and to use appropriate formal and informal assessment techniques to assess the development of young children, with particular focus on alternative forms of assessment. Student teachers will also learn how to create learning environments that are both nurturing and stimulating for young children. A spiral and experiential approach will be taken in the delivery of the courses in this Specialization. Field experiences will be arranged, where appropriate, to link theory with practice.

#### **ACW402 Teaching Lower Primary 2**

AUs: 4, Semester 2

Prerequisites: Must have taken first course before 2<sup>nd</sup> course and must have taken CS: English and CS: Mathematics (Option B)

This second course in this Primary (Option B) strand will build on the pedagogies and principles taught in the first course. Using the experiential approach again, student teachers will re-visit pedagogical principles and practices in planning and implementing a developmentally appropriate integrated curriculum for lower primary children, with an emphasis on how to cater to learner diversity within the integrated classroom. Student teachers will learn how to identify pupils with learning and behavioural needs, differentiate curriculum and instruction and create supportive learning environments to meet their needs. Student teachers will also look at how to collaborate with parents and the community to support children's learning and well-being.

#### **ASE201 Grammar**

AUs: 2, Prerequisites: NIL, Semester 1

This course introduces student teachers to the grammatical structures of the English Language, enabling them to understand the language requirements of the English Language Syllabus 2001. Through examining the grammatical systems of English in selected text types, the course explores ways of explaining grammar in use.

#### **ASE302 Exploring Language in Texts**

AUs: 2, Prerequisites: NIL, Semester 1

In this course, student teachers will understand how language is used in different text types to achieve different purposes. They will study both fiction and non-fiction texts written for children, and will learn how to analyse these text types in terms of context, purpose and audience to identify organisational structure, as well as key language features. Through tutorial activities, student teachers will see how all these features of texts work together and are used by readers and writers to communicate and construct meaning.

#### **ASE401 Current Trends in Language Education in the Upper Primary School**

AUs: 2, Prerequisites: NIL, Semester 1

(only for student teachers in the Primary (Option A) strand)

This course is for student teachers who wish to specialise in teaching English at the upper primary level. In this course, student teachers will learn about current Ministry of Education initiatives and how they are being implemented in schools at the upper primary level. The course will consider current moves in language education towards curriculum integration, multiliteracies and multimodalities. The principles presented will be referred to in the course 'Teaching the Language Skills at the Upper Primary Level.'

#### **ASM201 Number Topics**

AUs: 2, Prerequisites: NIL, Semester 1

This course provides the foundational understanding of arithmetic topics which form a major portion of the primary mathematics curriculum. Problem solving processes will be introduced and re-visited in the different topics. Course topics are: Problem solving; Foundations of the Hindu-Arabic System; Algorithms on number operations in a place value system; Classification of number systems; Divisibility; Ratio, proportion and rates.

#### **ASM202 Fundamental Principles of Primary Mathematics I**

AUs: 2, Prerequisites: NIL, Semester 1

This course surveys topics covered in primary school curriculum and provides linkages between the Academic Subject Mathematics courses. Topics include: Problem solving and problem posing; Binary operations and four operations of numbers, classification of number systems; Sequence and Series and decimal representation of numbers, rational and irrational numbers; Computation in different bases; Historical Numeration system; Number Theory and divisibility; Proportional reasoning; Algebraic reasoning; Inequalities and approximations; Counting methods and systematic listing.

**ASM301 Geometry Topics**

AUs: 2, Prerequisites: NIL, Semester 1

This course aims to equip the primary mathematics teacher with a deeper understanding of geometry and measurement topics in the primary mathematics curriculum. Processes such as mathematical deduction and induction will be emphasized. Topics are: Mathematical deduction and induction; Basic elements of geometry as study of space in 2 and 3 dimensions; Properties associated with parallel lines; Properties of geometrical figures; Similarity and Congruency; Measurement; Constructions and proofs; Motion Geometry and tessellations.

**ASM302 Fundamental Principles of Primary Mathematics II**

AUs: 2, Prerequisites: NIL, Semester 1

This course builds up the student teacher's knowledge of geometry and data topics from the perspective of concepts which are taught in the primary mathematics syllabus. The course will draw upon concepts and processes learned in Academic Subject Mathematics courses. Topics are: Introduction to Geometry and geometrical entities; Measurement in Geometry; Geometrical constructions with concrete and virtual tools; Problem solving in geometry; Statistics.

**ASM401 Further Mathematics Topics**

AUs: 2, Prerequisites: NIL, Semester 1

(Only for student teachers in the Primary (Option A) strand)

This course provides the mathematics teacher with deeper understanding and appreciation of the topics in the upper primary mathematics curriculum. Topics are:

Mathematical thinking; Use of dynamic geometry software and other software for mathematical investigations; Geometrical figures in 3-dimensions; Algebra; Statistical investigations: Stages, Representations of data; Measures of central tendency and spread; misuse of statistics.

**ASI201 General Musicianship I**

AUs: 2, Prerequisites: NIL, Semester 1

This course seeks to establish a foundation in musicianship skills (aural-training, sight-singing, keyboard skills, functional music theory and analysis) for the music classroom via the activities of creating, performing and responding.

**ASI301 General Musicianship II**

AUs: 2, Prerequisites: NIL, Semester 1

This course builds on foundational musicianship skills and seeks to intensify these skills while introducing concepts and principles of applying such skills to music teaching and learning for the classroom.

**ASI401 General Musicianship III**

AUs: 2, Prerequisites: NIL, Semester 1

(Only for student teachers in the Primary (Option A) strand)

This course provides advanced level musicianship training to prepare student teachers as a music specialist. It seeks to further reinforce and sharpen their aural perception, sight singing and keyboard skills and analytical understanding to fulfil the task of a music specialist in teaching and learning for both classroom and co-curricular music settings.

**ASK201 Topics in Physical Science for Primary Science Teaching**

AUs: 2, Prerequisites: NIL, Semester 1

This course deals with the theoretical and practical aspects of Physical Science topics selected from the new Primary Science Curriculum. The topics include matter and materials, forms of energy and conversions, heat, light and the solar system, magnetism and electricity, forces and simple machines.

**ASK301 Topics in Biological Science for Primary Science Teaching**

AUs: 2, Prerequisites: NIL, Semester 1

This course deals with the theoretical and practical aspects of topics in Biological Science from the new Primary Science Curriculum. The topics to be discussed include basic biology, classification and diversity of organisms (reproduction and life cycles), structure and function of plant systems, structure and function of animal systems, ecology and environmental issues.

**ASK401 Further Topics for Primary Science Teaching**

AUs: 2, Prerequisites: NIL, Semester 1

(Only for student teachers in the Primary (Option A) strand)

This course is a continuation of the SK Science Courses 1 and 2 and further elaborates on topics in biology and physics for teaching the primary science syllabus. Topics in biology include cells, DNA, mechanisms of plant and animal functions, and conservation. Topics in physical science include: electricity and magnetism, forces and motion, forms of energy, and contemporary physics concepts.

**ASL201 History for Social Studies**

AUs: 2, Prerequisites: NIL, Semester 1

This course aims to equip student teachers with an in-depth knowledge of the history of Singapore. The emphasis is on independent learning and critical thinking. Relevant historical skills such as handling sources, perspectives and oral history will be covered.

**ASL301 Geography for Primary Social Studies**

AUs: 2, Prerequisites: NIL, Semester 1

This course provides an insight into the physical and human environment of Singapore. Issues such as the constraints of a small island state, social, economic and political developments, conservation and preservation of natural and cultural heritage, human-nature interactions, Singapore in the context of ASEAN and the world community, and the dependence and interdependence of nations and regions will be discussed. Some relevant geographical skills such as map reading and photo interpretations will also be covered.

**ASL401 Issues and Themes in Upper Primary Social Studies**

AUs: 2, Prerequisites: NIL, Semester 1

(Only for student teachers in the Primary (Option A) strand)

This course offers an integrated approach to Social Studies content by drawing on multidisciplinary perspectives. Student teachers will be encouraged to examine themes and delve in greater depth into issues mainly through problem based learning and a series of seminars.

**AAA101 The Study of Art: Contexts and Concepts I**

AUs: 3, Prerequisites: NIL, Semester 1

A critical introduction to the materials, techniques, and interpretation of art, with emphasis on twentieth-century modernism and visual arts in its historical context. Discussion will revolve around a variety of media, including the fine arts, architecture, film, video, and installation and performance work. Student teachers will be helped to understand the main characteristics of the art produced, and the relationship of art to the culture in which it was created.

**AAA102 Visual Representation and Expression I: Issues in two-dimensional praxis**

AUs: 3, Prerequisites: NIL, Semester 1

Introduction to the concept and practice of representation and expression. Student teachers will consider the use of two-dimensional expressive and representational media and its role in the formation of symbolic systems. Using a combination of studio-practice and theory, student teachers will develop their own competence in two-dimensional representation and expressive processes. Additionally, links will be made to the role played by representational and expressive thought in children's intellectual and emotional development. Links with classroom practice will be made. Student teachers will also explore innovative methods of documenting a range of investigative and research-oriented activities undertaken in this course.

**AAA103 Understanding Visual Literacy**

AUs: 3, Prerequisites: NIL, Semester 2

Visual literacy refers to the capacity to read and interpret visual images. In contemporary culture, the visual image is being increasingly used as a vehicle through which information is relayed. From bill-boards to DVDs, from computer games to MTV clips, from television to the internet, information is being communicated visually. It is essential that we develop the capacity to understand that visual images do more than merely decorate. Visual images need to be read with the rigor and attention that was once reserved for the printed word. This course will offer an introduction to the study and interpretation of visual culture through a range of theoretical perspectives that seek to explain how visual images generate meaning.

**AAA104 Visual Representation & Expression II: Issues in three-dimensional praxis**

AUs: 3, Prerequisites: NIL, Semester 2

The concept and practice of representation and expression will continue to be investigated. Student teachers will consider the use of three-dimensional expressive and representational media and its role in the formation of symbolic systems. Using a combination of studio-practice and theory, student teachers will develop their own competence in

three-dimensional representational expressive processes. They will be encouraged to undertake projects in which they will develop an understanding of the relationships which link Sculpture and Ceramics. Links will be made to the role played by representational and expressive thought in children's intellectual and emotional development. Links with classroom practice will be made.

**AAA201 The Study of Art: Contexts and Concepts II**

AUs: 3, Prerequisites: NIL, Semester 1

This course will explore the visual and critical skills for interpreting the varied forms of artistic expression in Asia, both contemporary and traditional times. Student teachers will be helped to examine a variety of themes related to the techniques and functions of art, and study the way art expresses various moral, social, political, and religious ideas. Emphasis will be on the awareness of historical and critical functions of the visual arts.

**AAA202 Visual Representation and Expression III: Issues in new media praxis**

AUs: 3, Prerequisites: NIL, Semester 1

The concept and practice of representation and expression will continue to be investigated. Student teachers will consider the role of digital and interactive technologies in expressive and representational media and their role in the formation of symbolic systems. Using a combination of studio-practice and theory, student teachers will use new media technologies to develop their own competence in representational and expressive processes. Links with classroom practice will be made.

**AAA203 Visual Representation & Expression IV: Issues in new media praxis**

AUs: 3, Prerequisites: NIL, Semester 2

Student teachers will have the opportunity to build on their knowledge of concepts of representation and expression. They will further consider the use of digital and interactive technologies in relation to expressive and representational media and their role in the formation of symbolic systems. Using a combination of studio-practice and theory, student teachers will continue to investigate the use of new media and digital technologies in order to formulate, develop and sustain a self-generated inquiry. Student teachers will acquire working methods, research skills and the knowledge necessary for the successful implementation of concepts. They will continue to develop a critical awareness of contemporary and historical art issues relevant to the new technologies and their application to teaching.

**AAA204 Visual Representation & Expression V: Issues in Two-dimensional praxis**

AUs: 3, Prerequisites: NIL, Semester 2

Student teachers will further their investigations into the concept of representation and expression and their roles in the formation of symbolic systems. Student teachers will be encouraged to generate interdisciplinary links between an area of two-dimensional studio practice (drawing, painting or printmaking) and an aspect of either three dimensional studio practice or interactive, digital and new media studio practice. Student teachers will be expected to acquire working methods, research skills and the knowledge necessary to successfully carry out concepts. They will continue to develop a critical awareness of contemporary and historical issues in art and their application to teaching. Student teachers will also explore innovative methods of documenting the range of investigative and research-oriented activities relevant to this course.

**AAA301 Contemporary Southeast Asian Art I**

AUs: 3, Prerequisites: NIL, Semester 1

This course is the first of two courses that looks at the development of art in Singapore and in Southeast Asia. The interest here is in prospecting the contemporary in historical terms. This course focuses on ways by which the contemporary and the region are diversely seen, read, desired, claimed and discussed. The approach entails studies of art practices, productions and critical texts.

**AAA302 Visual Representation & Expression VI: Issues in three-dimensional praxis**

AUs: 3, Prerequisites: NIL, Semester 1

Student teachers will have the opportunity to elect to work in either sculpture or ceramics. Through an in-depth investigation they will continue to extend their understanding of concepts of representation and expression and their roles in the formation of symbolic systems. In consultation with lecturers, student teachers will produce a body of work through which they will acquire working methods, research skills and the knowledge necessary to successfully realize the full scope of a self-initiated project. They will also continue to develop a critical awareness of contemporary and historical issues in art and their application to teaching. Links with class room practice will be made.

**AAA303 Contemporary Southeast Asian Art II**

AUs: 3, Prerequisites: NIL, Semester 2

This course advances the aims and objectives in Contemporary Southeast Asian Art 1. The interest here is in examining the domains of the modern in Singapore and Southeast Asia and their connections and disconnections

with the contemporary. The courses focus on ways by which the contemporary and the modern are framed historically and art historically. The approach entails studies of art practices, productions and critical texts.

**AAA304 Visual Representation & Expression VII: Issues in interdisciplinary praxis**

AUs: 3, Prerequisites: NIL, Semester 2

This course provides student teachers with the opportunity to draw upon and combine their previous investigations into the concepts and practices of representation and expression in two-dimension, three-dimensional and new media studio practices. Student teachers will be encouraged to conduct an interdisciplinary investigation through which they will explore and articulate a personal artistic direction. Student teachers will be expected to acquire working methods, research skills and knowledge necessary for the successful implementation of a self-initiated project. They will also continue to develop a critical awareness of contemporary and historical issues in art and their application to teaching. Links with classroom practice will be made.

**AAA431 Studio Specialisation**

AUs: 3, Prerequisites: NIL, Semester 1

This course offers the opportunity for student teachers to develop a specific specialization in an area of artistic practice of their choice by drawing upon their previous investigations into the concept and practice of representation and expression. The student teacher will be required to engage in the development of a body of work under the guidance of an appointed supervisor.

**AAA432 Curatorial Practices and Exhibition**

AUs: 3, Prerequisites: NIL, Semester 1

This course will help student teachers develop an understanding about the ideas and values that shape the practice of exhibition in art museums and galleries. Through discussions about the major issues intrinsic to specific types of exhibition projects, the class will develop critical awareness of contemporary and art historical issues surrounding curatorial practices and exhibition. Links with classroom practice will be made.

**AAB101 Biodiversity in Natural Ecosystems**

AUs: 3, Prerequisites: NIL, Semester 1

Origin, classification and organization of living organisms as they increase in complexity from lower to higher forms; Biological adaptation and phylogenetic relations among the major groups of organisms (micro organisms, plants and animals); Overview of natural ecosystems, with particular emphasis on tropical rainforests, mangrove habitats, intertidal shores and coral reefs; Study of the diversity and interactions of organisms in these tropical ecosystems. These topics are taught with special emphases on linkages to the current school curricula.

**AAB102 Cell Structure and Function**

AUs: 3, Prerequisites: NIL, Semester 1

The course provides an overview of the chemical constituents of cells, their biological roles and the organization and function of eukaryotic cells. The structure of different cell types and organ systems in both plants and animals and the relation to their physiological functions in an organism will also be discussed. Topics of this course are taught with special emphases on linkages to the current school curricula.

**AAB103 General Microbiology**

AUs: 3, Prerequisites: NIL, Semester 2

This is a basic course on general microbiology. Microorganisms – bacteria, viruses, fungi - what they are, how they grow and replicate, their interactions with the environment, and the importance of microorganisms to life will be introduced. How microorganisms play a part in disease and health, and how they are controlled will also be discussed. Issues relating to the emergence of new and resurgence of old infectious diseases are included. Topics of this course are taught with special emphases on linkages to the current school curricula.

**AAB104 Current Genetics**

AUs: 3, Prerequisites: NIL, Semester 2

Cell division, mitosis and meiosis; Principles of genetics and its fundamental laws on genetic segregation and assortment. Mendelian genetics and extensions of Mendelian ratios. Genetic laws of inheritance and the effect of genotype and alleles affecting phenotype and trait. The effect of DNA make-up, RNA and protein activities of the various genes and the mutations and variations that have or are occurring in a dynamic fashion. Developmental, cancer and behavioral genetics will also be covered. Population and evolutionary genetics. These topics are taught with special emphases on linkages to the current school curricula.

**AAB201 Diversity and Evolution of Plants**

AUs: 3, Prerequisites: NIL, Semester 1

The diversity of plants has long been one of the cornerstones of "traditional" biology. Plant diversity, far from being a static body of knowledge, is a dynamic and progressive field. We will not only learn about the diversity of plants per se, but also about the evolutionary history of plants. Developments in the field of plant diversity studies will be highlighted, as well as the links between plant diversity studies and other areas of the biological sciences. Topics to be covered will include photosynthetic protists, a survey of the Plant Kingdom, plant adaptations and selected life history strategies, and an introduction to plant phylogeny. Topics of this course are taught with special emphases on linkages to the current school curricula.

#### **AAB202 Animal Diversity and Evolution**

AUs: 3, Prerequisites: NIL, Semester 1

Concepts of evolution of diversity, speciation and phylogenetic inter-relationships among major invertebrate and vertebrate phyla are discussed based on anatomy, biological design, body size, form and functions. Other aspects covered include allometry, biomechanics; developmental and comparative embryology; major organ systems, e.g., integumentary, cardiovascular system, skeletal system, nervous systems; adaptations; ectothermy and endothermy. A synthesis of evolutionary biology concludes the course. Topics of this course are taught with special emphases on linkages to the current school curricula.

#### **AAB203 Ecology**

AUs: 3, Prerequisites: NIL, Semester 2

The course covers concepts in population, community, and applied ecology. Topics included are: population parameters, their measurements and methods of studying populations; population growth; population fluctuations and cycles, regulation and dynamics; life history patterns and strategies; inter-species interactions and co-evolutionary interactions, organizational and functional basis in plant and animal communities; changes in community structure, organization and composition over time; the influences of agents of disturbance or stability as well as diversity indices as measurements of community structure. Topics of this course are taught with special emphases on linkages to the current school curricula.

#### **AAB204 Molecular Biology**

AUs: 3, Prerequisites: NIL, Semester 2

Topology of nuclei acids. Regulation of gene expression in prokaryotes and eukaryotes; operons; controls at transcriptional and translational levels. Replicons and DNA replication and recombination. Role of centromere and telomere; process and significance of gene amplification. The transposons and its derivatives through evolution. Dynamics of DNA in genome; introns and exons. Satellite DNAs and immune diversity. Roles of homeotic genes in development of eukaryotes. Protein trafficking and signal transduction. The importance of understanding these concepts and facts in deriving benefits for mankind and the environment will be emphasized. These topics are taught with special emphases on linkages to the current school curricula.

#### **AAB205 Evolution and Diversity of Life**

AUs: 3, Prerequisites: NIL, Semester 1

Our planet is home to millions of different kinds of life forms. What is the range of diversity among living things, how do scientists classify this diversity, and what types of research are at the cutting edge of this exciting field? Moreover, we intend not only to study diversity alone, but in addition we will examine the processes by which diversification occurs in Nature. Topics to be covered include an introduction to evolution and phylogeny, classification systems, and survey of the living world. Topics are taught with special emphases on linkages to the current school curricula.

#### **AAB206 General Physiology**

AUs: 3, Prerequisites: NIL, Semester 1

The course provides an introduction to the basic physiological processes in an organism. Topics include energy transformation, enzymes, cellular respiration, gaseous exchange in animals, heterotrophic nutrition, autotrophic nutrition including plant mineral nutrition and photosynthesis, physiology of cellular transport in animals, uptake and transport in plants, muscle contraction, homeostasis, excretion and osmoregulation, nervous control and temperature regulation in animals, hormonal communication and reproduction in plants and animals. Topics are taught with special emphases on linkages to the current school curricula.

#### **AAB301 Biochemistry**

AUs: 3, Prerequisites: NIL, Semester 1

Cells depend on a continuous inflow and outflow of energy, material and information for its continued existence. The emphasis here will be on the principles of bioenergetics, biosynthesis and catabolism of carbohydrates, fats, amino acids and nucleic acids and the regulation, integration of metabolic pathways in the organism and enzyme kinetics. Basic biochemical techniques like centrifugation, spectrophotometry, column chromatography, thin-layer chromatography, and electrophoresis will be covered in the practical session.

### **AAB302 Animal Physiology**

AUs: 3, Prerequisites: NIL, Semester 2

This course seeks to explain the physiological processes that are needed for the functioning of an organism. The integration of these physiological processes in an organism will also be discussed. Topics covered include digestion, gas exchange, muscle contraction and locomotion, acid base balance, osmoregulation, heart and circulation, temperature regulation and nervous control.

### **AAB303 Plant Physiology**

AUs: 3, Prerequisites: NIL, Semester 2

Metabolism of water and inorganic ions, light use and leaf gas exchange, carbon dioxide assimilation and respiration, distribution of photoassimilate within plants, plant growth and options for reproduction, plant hormones: chemical signalling in plant development, responses of plants to environmental stress and the ability of a plant to withstand stress. The importance of understanding plant physiological processes from the horticultural point of view. The topics are learnt through lecture, cooperative learning, and discussion on selected current research literature of plant physiology, practical class and mini-project.

### **AAB304 Quantitative Biology**

AUs: 3, Prerequisites: NIL, Semester 1

Data description and types of biological data; sampling from populations. The arithmetic mean, median, mode, range, mean deviation, variance, standard deviation, coefficient of variation. Chi-square goodness-of-fit, contingency tables. One sample hypotheses concerning the mean, reporting variability about the mean. Two sample hypotheses: testing for difference between two means and variances. Paired-sample hypotheses: the paired-sample *t* test. Multisample hypotheses: the analysis of variance (ANOVA), single factor analysis and multiple comparisons. Two factor ANOVA and interaction between variables. Data transformations. Simple linear regression, multiple regressions, regression vs correlation. Fundamentals of experimental design. Other quantitative aspects of quantitative biology: Hardy-Weinberg equation in population genetics, cladistics and numerical taxonomy in vertebrate zoology, clustering in molecular biology.

### **AAB431 Independent Study Project**

AUs: 3, Prerequisites: NIL, Semester 1

This course exposes student teachers to all phases of the research process through inquiry-based learning strategies. These include the formulation of a research problem, setting of hypotheses, the design of experiments, data collection and analyses, and the discussion of results. This course provides opportunities for investigations in current research in the life sciences.

### **AAB432 Modern Biotechnology**

AUs: 3, Prerequisites: NIL, Semester 1

Developments, methods and applications in microbial, plant, animal and medical biotechnology. Overview of biotechnology: what is biotechnology; the molecular revolution, recombinant DNA technology. Microbial biotechnology: industrial fermentation, products from microbial sources (enzymes, antibiotics, plastics), genetic modification of microorganisms, vaccines, use of immobilised cells, bioconversions. Plant biotechnology: tissue culture (micropropagation, somatic embryogenesis, somaclonal variation), plant genetic engineering. Animal biotechnology: gene transfer methods (microinjection, embryonic stem cell gene transfer), cloning, transgenic animals. Medical biotechnology: human genome project, DNA sequencing, DNA fingerprinting, gene therapy, stem cell research, tissue engineering, xenotransplantation, drug delivery. Regulation of biotechnology. Ethical, legal and social implications of uses of biotechnology in agriculture and medicine.

### **AAB433 Animal Behaviour**

AUs: 3, Prerequisites: NIL, Semester 1

Approaches to the study of the behaviour of diverse animals, the measurement and analysis of animal behaviour for an understanding of the evolutionary and adaptive significance of behaviour as a functional unit are the foci of this course. Topics covered include: mechanisms and evolution of animal behavior, neural, physiological, and genetic analysis of behaviors; spatial orientation, rhythmic behaviour, biological clocks, learning (instinct, imprinting, conditioning, habituation, etc.); communication; foraging and antipredator behaviour; sexual selection, parental care and mating systems; group living, social behaviour and eusociality; altruism; primate behaviour

### **AAB434 Physiological and Biochemical Adaptation**

AUs: 3, Prerequisites: NIL, Semester 1



Why are some fishes capable of surviving on land for long periods of time while others would die within minutes? Why are some animals like the sipunculids, bivalves, sea slugs and mudskippers able to live in the mudflats that are exposed to fluctuating salinities, high ammonia and low oxygen contents? How do plants sense the changing environment? How do plants cope with drought stress? How do plants respond to increases and decreases in photosynthetically active radiation (PAR)? Under what environmental conditions, plants engage different types of photosynthesis based on the modes of carbon fixation ( $C_3$ ,  $C_4$ , and CAM plants)? How do plants tackle global warming and is an increased  $CO_2$  levels benefiting plant productivity? This course aims to provide the physiological and biochemical mechanisms found in different types of animals and plants which allow them to survive in their unique habitat.

**AAB435 Tropical Marine Biology**

AUs: 3, Prerequisites: NIL, Semester 1

The ocean as a habitat; Classification of the marine environment; Adaptations of marine life; Deep sea, open ocean, Intertidal shore and soft-bottom communities (including estuaries, continental shelf, coral reef ecosystems and life in the abyss); Living in the epipelagic and nature of marine food webs; resources from the sea; Advances in marine technology and exploration; Modern marine biotechnology; Applications of marine biofouling, chemical defences, drug discovery in the biomedical and environmental sciences.

**AAY101 General Chemistry**

AUs: 3, Prerequisites: NIL, Semester 1

Atomic structure and properties, quantum numbers, the exclusion principle, electronic configurations of elements. Periodic properties and group trends. Ionic and atomic sizes; ionic, covalent and metallic bondings; polarising ability and polarisability; properties of ionic and covalent compounds. Polarity of bonds, characteristics of polar and non-polar compounds. Mole concept and stoichiometry. Redox reactions, half reactions, balancing equations, Gibbs equation and general applications of redox reactions in our environment. These topics are taught with special emphases on linkages to the current school curricula.

**AAY102 Fundamentals of Physical Chemistry**

AUs: 3, Prerequisites: NIL, Semester 1

The gas laws: real gases, the van der Waals equation; kinetic theory of gases; thermodynamics: first, second and third laws and their applications; thermochemistry; chemical equilibria. These topics are taught with special emphases on linkages to the current school curricula.

**AAY104 Introductory Organic Chemistry**

AUs: 3, Prerequisites: NIL, Semester 2

General principles of organic chemistry – bonding, classification, reaction mechanisms and stereochemistry. Physical and chemical properties of alkanes, alkenes, alkynes, alkyl halides, aromatic compounds, alcohols and thiols, and ethers and epoxides. These topics are taught with special emphases on linkages to the current school curricula.

**AAY105 Main Group Chemistry**

AUs: 3, Prerequisites: NIL, Semester 2

Simple molecular orbital treatment of diatomic molecules, both homonuclear and heteronuclear; bond order and bond strength. Molecular shapes and VSEPR theory; hybridization of orbitals,  $sp$ ,  $sp^2$ ,  $sp^3$ ,  $sp^3d^2$ . General trends in the chemistry of Main Group elements, with emphasis on hydrides, oxides and halides. Concepts of acids and bases, protonic and aprotic; concept and applications of non-aqueous solvent systems. These topics are taught with special emphases on linkages to the current school curricula.

**AAY201 Introduction to Spectroscopy**

AUs: 3, Prerequisites: AAY101, Semester 1

Basic principles of spectroscopy: electromagnetic radiation, quantum theory of absorption and emission. Vibrational spectroscopy: infrared and Raman spectroscopies. Electronic absorption and emission spectroscopy: chromophores, Beer-Lambert Law, UV-visible and atomic spectroscopy. Nuclear magnetic and electron-spin resonance spectroscopy: nuclear and electron spin energy levels in a magnetic field, shielding/deshielding and chemical shifts, spin-spin coupling. These topics are taught with special emphases on linkages to the current school curricula.

**AAY202 Chemical Kinetics and Electrochemistry**

AUs: 3, Prerequisites: AAY102, Semester 1

Chemical kinetics: rate law, order and mechanism of reactions, steady state approximation, enzyme kinetics, Arrhenius equation. Basic theories of reaction rates: simple collision theory, activated complex theory. Electrochemistry and transport phenomena: conductance, mobility and transport number. Electrodes and electrochemical cells, electrolyte equilibria and activity. These topics are taught with special emphases on linkages to the current school curricula.

**AAY203 Further Organic Chemistry**

AUs: 3, Prerequisites: AAY104, Semester 2

Aldehydes and ketones, carboxylic acids and derivatives, amines and amides, heterocycles. The use of ultraviolet (UV) spectroscopy, infra-red (IR) spectroscopy, mass spectrometry and <sup>1</sup>H nuclear magnetic resonance (NMR) spectroscopy for structural elucidation of organic molecules. These topics are taught with special emphases on linkages to the current school curricula.

**AAY204 Transition Metal Chemistry**

AUs: 3, Prerequisites: AAY101, Semester 2

Nomenclature and structures; geometric, coordination and optical isomerisms. Kinetic and thermodynamic stability, labile and inert complexes. Simple reaction mechanisms; associative and dissociative, inner and outer sphere electron-transfer mechanisms. Crystal field theory, octahedral, tetrahedral and square planar environments, weak and strong fields, Jahn-Teller effects. Simple Ligand Field and Molecular Orbital treatments. Electronic transitions, selection rules, ultraviolet and visible spectral interpretations. Paramagnetic and diamagnetic properties of transition metal complexes; Curie and Curie-Weiss laws. These topics are taught with special emphases on linkages to the current school curricula.

**AAY301 Introductory Analytical Chemistry**

AUs: 3, Prerequisites: AAY201,202, Semester 1

Concepts in analytical chemistry and data handling. Sample treatment and extraction. Separation techniques: gas, liquid and 2-D chromatography. Spectrometric methods: atomic absorption and emission spectrometry, UV-visible spectrophotometry. Introduction to electroanalysis; conductometry, potentiometry, voltammetry and coulometry. Applications of analytical chemistry.

**AAY302 Bio-inorganic and Bio-organic Chemistry**

AUs: 3, Prerequisites: AAY203,204, Semester 2

Biomolecules: amino acids, peptides and proteins; fats, oils, steroids and terpenes; carbohydrates; nucleic acids. The role of metal ions in biological systems; oxygen-carrier proteins, electron-transfer proteins and metalloenzymes. Metal management: uptake, transport, and storage.

**AAY303 Experimental Techniques in Chemistry**

AUs: 3, Prerequisites: AAY101,102,104,105, Semester 1

This is a laboratory-based course. The course builds on the experimental skills acquired through the various chemistry courses offered in previous years. In this course, student teachers will learn experimental techniques and instrumental methods in advanced inorganic, organic, physical and analytical chemistry. It aims to bring student teachers to a high level of competence in synthesis, making careful chemical and physical measurements, making logical deductions and in communicating results accurately and precisely.

**AAY330 Environmental Chemistry**

AUs: 3, Prerequisites: AAY101,104, Semester 1/2

Concepts and basic problems in environmental issues. Bio-geochemical cycles of elements, with emphasis on carbon, nitrogen and oxygen cycles. Solar energy, fossil fuel and the green-house effect. The atmosphere and atmospheric chemistry. Air pollution; photochemical reactions, kinetics and ozone depletion. Water chemistry and resources. Sewage, solid waste and waste management. Chlorinated organic compounds, polynuclear aromatic hydrocarbons. Toxic metals in the environment. Pollution control and minimization; decontamination and remediation methods; advanced oxidation processes. Environmental chemical analysis.

**AAY331 Organometallic Chemistry**

AUs: 3, Prerequisites: AAY104,204, Semester 1/2

Structure, bonding, synthesis and reactions of metal complexes with carbonyl, alkyl, hydride and unsaturated hydrocarbon ligands. Organometallic reaction mechanisms: sigma-pi rearrangement, beta-elimination, migratory insertion, oxidative addition, reductive elimination. Homogeneous catalysis of organic reactions by transition metal complexes, including: hydrogenation, isomerization, polymerisation, hydroformylation, Wacker process.

**AAY332 Phase Equilibria and Colligative Properties**

AUs: 3, Prerequisites: AAY102, Semester 1/2

One-component systems: phase diagrams; Clapeyron equation and Clausius-Clapeyron equation, phase rule. Two-component systems (simple mixtures): thermodynamic description of mixtures and partial molar properties; vapour-liquid equilibria of binary liquid mixtures: ideal solutions, Raoult's law and Henry's law; colligative properties: elevation of boiling point, freezing point depression, osmotic pressure, molar mass determination by freezing point depression and osmotic pressure.

**AAY333 Organic Reaction Mechanisms and Synthesis**

AUs: 3, Prerequisites: AAY203, Semester 1/2

Basic principles for writing organic reaction mechanisms. Frontier orbitals. Factors controlling organic reactions: thermodynamic and kinetic factors; stereochemical and electronic factors. Survey of the main types of organic reaction mechanisms. Reactions of carbonyl compounds with alpha hydrogen atoms; enols and enolates. Pericyclic reactions. The disconnection approach to organic synthesis; synthons. These topics are taught with special emphases on linkages to the current school curricula.

**AAY334 Industrial Chemistry**

AUs: 3, Prerequisites: AAY101,104, Semester 1/2

History and development of the industry. Sources of chemicals. Main sectors of chemical industries; their social and economical importance towards national and regional development. Operational, pollution and logistic issues. Petrochemical industry and energy sector; petrochemicals and their utilizations. Industrial catalysts, chloro-alkali products and the gas industry. Agricultural chemicals and specialty chemicals. Research and development. These topics are taught with special emphases on linkages to the current school curricula.

**AAY430 Independent Study Project**

AUs: 3, Prerequisites: AAY303 & CGPA $\geq$ 3.50 (for chemistry courses), Semester 1/2

In this course, a student teacher undertakes an individual research project under the supervision of an academic staff that will expose him/her to the various phases of research work. This course enables the student teacher to apply knowledge and hone problem-solving and critical thinking skills. The student teacher is expected to carry out experiments in the Chemistry laboratory. The experience will prepare the student teacher in the supervision of project work of school students in future.

**AAY431 Advanced Analytical Chemistry**

AUs: 3, Prerequisites: AAY301, Semester 1/2

Chromatographic theory: Fick's first and second laws; principles of peak retention and resolution, zone spreading, Einstein diffusion coefficient, theoretical plates. Modern chromatographic systems: column and detector technology; purge-and-trap, head-space analysis, solid-phase microextraction. Mass spectrometry: methods of ionization and mass analysis; hyphenated techniques, GC-MS, LC-MS, MS-MS. Automation, miniaturization, data management and quality assurance in modern analytical science. Case studies.

**AAY432 Materials Chemistry**

AUs: 3, Prerequisites: AAY104, Semester 1/2

Introduction to the major groups of materials: metals, polymers, ceramics, and composites. Crystal structures, defects and fundamental properties of materials. Polymer synthesis and characterization, polymer properties, hydrogels, polymer degradation and biodegradable polymers, polymer processing for tissue engineering. Biomaterials. Fullerenes and carbon nanotubes.

**AAY433 Medicinal Chemistry**

AUs: 3, Prerequisites: AAY203, Semester 1/2

This course introduces the basic principles and practice of medicinal chemistry. This is illustrated by how ideas for new drugs are taken through the various stages from initial discovery, generation of lead compounds, optimization of biological activity, and finally into clinical trials. The mechanism of action of clinical drugs (antiviral, antibacterial, anticancer, anti-inflammatory, and anti-parasitic) used for treatment of human ailments will be discussed. Chemical principles of herbal medicine will also be discussed. These topics are taught with special emphases on linkages to the current school curricula.

**AAC101 Textual Analysis and Writing Practices**

AUs: 3, Prerequisites: NIL, Semester 1

This course aims to acquaint student teachers with good Chinese writing through close textual analysis of literary works and commentaries of different kinds of writing. It also aims to enhance student teachers' reading ability and sharpen their writing skills.

**AAC102 Modern Chinese Phonology and Hanyu Pinyin**

AUs: 3, Prerequisites: NIL, Semester 1

This course will equip student teachers with basic knowledge of Phonetics and Phonology of Modern Standard Chinese. The objective is to enable student teachers to apply such knowledge in teaching.

**AAC103 Chinese Rhetoric**

AUs: 3, Prerequisites: NIL, Semester 2

This course deals with the functions of rhetoric in literature and everyday life. It aims to enable student teachers to determine the linguistic structure of an expression and relate it to its meaning and rhetorical effects.

**AAC201 Chinese Etymology and the Modern Chinese Script**

AUs: 3, Prerequisites: NIL, Semester 1

This course aims to equip student teachers with basic knowledge in Chinese etymology and the modern Chinese script. Such knowledge will enhance their ability as a Chinese language teacher, especially when it comes to the teaching of recognition of Chinese characters.

**AAC202 Critical Reading and Writing in Chinese**

AUs: 3, Prerequisites: NIL, Semester 1

This course aims to familiarize student teachers with the form and conventions of academic writing in Chinese. The objective is to enhance critical reading and writing competencies through a variety of tasks, such as analyzing given texts from various sources; constructing a focused, logical, coherent view-point; selecting and sourcing relevant research material; drafting, revising and editing a short essay; writing a mini research paper.

**AAC203 Modern Chinese Lexicology**

AUs: 3, Prerequisites: NIL, Semester 1

The course aims to provide student teachers with a basic knowledge of the nature and classification of the Chinese lexicon.

**AAC204 Modern Chinese Grammar**

AUs: 3, Prerequisites: NIL, Semester 1

This course aims to provide student teachers with a basic knowledge of modern Chinese grammar. It will equip them with the concepts and skills to analyze parts of speech and sentence structures of various kinds of modern Chinese writings in daily and academic life as well as in school settings.

**AAC331 Translation and Contrastive English-Chinese Linguistics**

AUs: 3, Prerequisites: NIL, Semester 1/2

Introduction to synchronically contrastive linguistics; theoretical and practical aims; models and examples of contrastive study between Chinese and English at orthographical, morphological, semantic and syntactic levels, theories and practice of translation.

**AAC332 Features of Singapore Mandarin**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course focuses on the description of the phonology, vocabulary, and syntax of Singapore Mandarin. The historical and present-day influence on Singapore Mandarin from Chinese dialects and other non-Chinese languages in Singapore, the different varieties of Singapore Mandarin and its standardization, and the role of Mandarin in the multilingual context of Singapore will also be examined.

**AAC333 Language Acquisition and Learning of Chinese**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course aims to equip student teachers with a basic knowledge in language acquisition models and theories. It aims also to enhance their understanding of normal language development in primary and secondary school and the issues related to learning Chinese as a second language in the special context of Singapore. Student teachers will also be able to have a better understanding of developing bilingualism from infancy through school and the role of language socialization in language acquisition.

**AAC334 Classical Chinese Grammar**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course focuses on the grammar of the Chinese language prior to the Tang period. It deals with the development of classical Chinese grammar and compares classical Chinese grammar with modern Chinese grammar, with focus on the morphological and syntactic components. It aims to enhance student teachers' ability to read classical Chinese writings as well as consolidating their understanding of the grammar of the Chinese language.

**AAC335 Selected Readings in Chinese Linguistics**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course exposes student teachers to various kinds of writings in the area of Chinese general linguistics, Chinese etymology, grammar, lexicology, phonology and sociolinguistics. The objectives are to enrich their knowledge in Chinese language and enhance their ability to do research in the field of Chinese linguistics for academic and teaching purposes.

**AAC431 Computer Applications in Chinese Language and Literature**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course provides the fundamental principles and knowledge on the use of IT in the studying and teaching of Chinese Language and Literature. It also aims to equip student teachers with essential digital skills and power tools to achieve the goals in their academic and teaching profession.

**AAC432 Chinese Language and Culture**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course aims to introduce different aspects of Chinese language and culture, with an emphasis on the dynamic relationship between them. Student teachers will better grasp the cultural and social dimensions of Chinese language and thereby have a greater ability of communication.

**AAJ101 Survey of Modern Chinese Literature**

AUs: 3, Prerequisites: NIL, Semester 1

This course aims to provide student teachers with a basic knowledge of modern Chinese literature and enhance their understanding of modern Chinese people and their society.

**AAJ131 Readings in Children's Literature**

AUs: 3, Prerequisites: NIL, Semester 2

This course examines the historical development of children's literature, its various genres and its relevance to the linguistic, imaginative and psychological development of children, with focus on the teaching of Chinese in primary schools.

**AAJ132 Creative Writing Workshop**

AUs: 3, Prerequisites: NIL, Semester 2

This course aims to enhance student teachers' ability to appreciate and write creative writings so that eventually they can guide their pupils in creative writing.

**AAJ201 Selected Readings in Classical Chinese Prose**

AUs: 3, Prerequisites: NIL, Semester 2

This course aims to enhance student teachers' ability to appreciate classical prose writings and enrich their understanding of Chinese culture.

**AAJ202 Selected Readings in Classical Chinese Poetry**

AUs: 3, Prerequisites: NIL, Semester 2

The course aims to equip student teachers with a basic knowledge of classical Chinese poetry and enhance their ability to appreciate the works of this genre.

**AAJ331 Chinese History**

AUs: 3, Prerequisites: NIL, Semester 1/2

This is a survey of Chinese history from antiquity to the modern era in the perspective of world history.

**AAJ332 History of Chinese Literature**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course aims to equip student teachers with a basic knowledge of the history of Chinese literature from the Western Zhou to the Qing dynasty, as well as the stylistic features of various genres throughout Chinese history.

**AAJ333 Introduction to Chinese Thought**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course aims to provide student teachers with a basic knowledge of the major philosophical schools in Chinese history. Student teachers will be challenged to reflect on their own life beliefs and modern ethics and norms.

**AAJ334 Tang Poetry**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course aims to enhance student teachers' ability to understand and appreciate Tang poetry.

**AAJ335 Song Ci**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course aims to enhance student teachers' ability to understand and appreciate Song lyric poetry.

**AAJ431 Contemporary China**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course aims to provide student teachers with a basic understanding of contemporary China from various perspectives such as historical, political, economic, sociological, geographical, and international latest development.

**AAJ432 Classical Chinese Fiction**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course aims to provide student teachers with a basic knowledge of the development and characteristics of the classical Chinese fiction. They will read selected tales of the Six Dynasties, *chuanqi* and *huaben* stories of the Tang and Song periods as well as excerpts from the four major novels, namely, The Romance of the Three Kingdoms, The Water Margin, The Journey to the West and The Dream of the Red Chamber.

**AAJ433 Classical Chinese Drama**

AUs: 3, Prerequisites: NIL, Semester 1/2

The course aims to equip student teachers with the basic knowledge of the form and development of Chinese classical drama. It will include a comparative study of systems and traits of classical drama, the classification and appreciation of classical drama. An understanding of the influence of the classical drama on Chinese ethics and moral concepts.

**AAU101 Acting**

AUs: 3, Prerequisites: NIL, Semester 1

Explores the processes of personal preparation for a range of acting roles and performance modes. Gives initial experience of Asian and presentational modes as well as the traditional core work in realistic acting. Emphasises personal commitment to and ownership of the process. Both group and individual performances will be presented and assessed, supported by journals and written theoretical accounts.

**AAU102 Foundations of Drama**

AUs: 3, Prerequisites: NIL, Semester 1

This will constitute a general introduction to the field of drama, in its literary, theatrical, performative and educational aspects. Set texts will include a Shakespeare play and a Singapore play, and there will be a theatre visit. The plays will be approached dramaturgically – through the means of analysis for theme, structure, character and patterns of language; through the possible theatrical modes for their realisation; and through practical work on the text as a script for performance, focussing on the work of the actor/performer. Elementary theory will be incorporated to give the student teachers critical purchase on the knowledge base. An overarching concern will be the historical and present-day social purposes of theatre, and in this context the important area of educational drama will be introduced. The course thus establishes a foundation for the other six core courses at Levels 1 and 2.

**AAU103 Educational Drama**

AUs: 3, Prerequisites: NIL, Semester 2

This course introduces student teachers to the history, philosophies and theories of educational drama. The focus will be on learning in, through and about drama with a practical orientation. Links will be drawn between developments in our understanding of how children learn and the ways that educational drama practices have contributed to discourse in the field.

**AAU104 Contemporary Theatre in Singapore and Southeast Asia**

AUs: 3, Prerequisites: NIL, Semester 2

The course will explore issues that are relevant in contemporary Southeast Asian theatre, with particular emphasis on Singapore and Malaysia and a brief introduction to Indonesia and the Philippines. It will include an introduction to the elements of traditional theatre as well as theatre forums with theatre practitioners on current practices, and will consider questions of identity, history, social and cultural changes and the trends. Student teachers will be required to prepare a 10-20 minute workshop performance in groups which may be an excerpt or adaptation of a play from the region.

**AAU201 Twentieth-Century Theatre and Drama**

AUs: 3, Prerequisites: NIL, Semester 1

The course will explore some of the practices and ideas that have had a significant impact on theatre in the 20th Century. It will often revolve around the writings or practices of theatre practitioners. Sometimes it will include other cultural influences such as political thought and social ideology, and their integration into theatre practice. The course will be taught through workshop and lecture and student teachers will be required to engage in practical and theoretical discussion, as well as prepare a workshop performance for assessment.

**AAU202 Applied Theatre**

AUs: 3, Prerequisites: NIL, Semester 1

Applied Theatre is a term pertaining to drama/theatre practices which focus on participation and transformation. *Theatre in Education* (TIE), *Theatre in Health Education* (THE), and *Theatre for Development* (TFD) as well as *Process Drama* are all forms of Applied Theatre. This course introduces the practical, theoretical and philosophical underpinnings of these approaches.

**AAU203 Physical Theatre**

AUs: 3, Prerequisites: NIL, Semester 2

This course explores the fundamental ideas of physical theatre and provides practical training in the relevant skills. It will focus on the articulation of ideas through the articulation of the body by emphasizing movement and gesture. It will use experimental techniques of improvisation, movement analysis, contact improvisation and basic choreography in extending the vocabulary of the body. It will discuss how physical theatre has influenced much contemporary theatre and trace its origins to traditions from the East and West. The course will also employ selected literary texts of poetry and prose to be used for performance.

**AAU231 Traditional Asian Theatre Forms**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course will examine aspects of form, style and technique in major traditional theatre forms across Asia, such as Noh in Japan, Beijing Opera in China and Kathakali in India. It will employ an integrated approach to learning these forms by using practical workshops that are informed by history and theory. It will also examine some relevant literary texts that have become part of the tradition. The course will discuss and analyse the theoretical frameworks within which these forms have developed and how they continue to influence ideas about tradition in Asia.

**AAU232 Technology, Media and Theatre**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course will examine theatre as a live performance and its implications in a mediated culture. It will discuss the idea of 'liveness' in a world increasingly dominated by media technology and consider how this implies a reduced space for 'live' performances. It will study technologised performance as an emergent space and analyse how the element of 'liveness' impacts on theatre's value. It will also explore how theatre contends with mass media and popular forms of technologised culture. The course will provide opportunity for creating live performance that uses technology and engages media culture to enhance as well as question the quality of 'liveness' in theatre.

**AAU301 Cultural Theory and the Theatre**

AUs: 3, Prerequisites: NIL, Semester 1

This course explores contemporary theatre within the frame of cultural theory. It will highlight significant aspects of theories such as post-colonialism, gender and post-modernism, and trace how they have had a marked impact on theatre performances in a range of contexts. The approach taken will include the close examination of theatre practice that is informed by cultural theory. It will study how practice can be constructed to embody and develop forms of contemporary theatre making. It will involve watching contemporary performances and analyzing the construction of work according to the ideas being examined. The course will also provide opportunity to create original performances that are critically informed by theory and analysed within the respective framework.

**AAU302 The Director in the Theatre**

AUs: 3, Prerequisites: NIL, Semester 2

Practical work in the process of directing – from conceptualization through design and rehearsal to performance – with the working context of managing relationships and the theoretical context of the major directors in the last hundred years and the implications of their work for the cultural operation of theatre. The significance of changing relationships with the actor and with audience are two central motifs.

**AAU331 Technical Theatre**

AUs: 3, Prerequisites: NIL, Semester 1/2

A detailed practical investigation of lighting design and operation, sound design and operation, costume and set design and stage management practices (including safety). The context for this work is the essential artistic contribution made by these practical aspects of theatre-making and the historical changes that are represented through changing techniques, just as much as through changing playscripts.

**AAU332 Early Modern Theatre and Drama**

AUs: 3, Prerequisites: NIL, Semester 1/2

Covers the major theatre developments in Western Europe between 1580 and 1700, together with study of representative dramatic texts. The large context is the change from pre-modern to enlightenment mentalities, and the

historical disruptions which were part of this change. The theatre is seen as a cultural site which, in the detail of its modes of presentation, embodies and reflects upon these changes.

**AAU333 Theatre for Development**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course takes a critical stance with regard to contemporary Applied Theatre and Community Theatre models. Student teachers will consider the ethics and implications of social and cultural constraints and impacts of TFD in a global society. The practical workshops aim to empower student teachers to devise and co-create impactful and culturally sensitive works.

**AAU334 Semiotics and Aesthetics of Theatre**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course will examine key topics in analyzing performance such as decoding the sign, the politics of performance, the performing body, audience and spectatorship. It will draw on critical theory in semiotics and aesthetics to inform the understanding of theatre as a sign-system and aesthetic space. The approach will involve examining what is involved in the practical construction of performance texts and mise en scene whilst giving opportunity for original performance texts created in the course to be deconstructed and analysed.

**AAU335 Modern Drama**

AUs: 3, Prerequisites: NIL, Semester 1/2

An investigation of modern approaches to drama and theatre from Chekhov and Ibsen through to more contemporary playwrights. These texts may be addressed in seminars and performance workshops.

**AAU336 Dramaturgy and Writing for the Theatre**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course offers an investigation of the role of the dramaturg in contemporary theatre practice. It focuses on playwrighting processes, dramaturgical methods, criteria used for script assessment and the role of the script editor. Student teachers will have the opportunity to create original texts and act as dramaturgs for their peers.

**AAU402 Performance and Production**

AUs: 3, Prerequisites: NIL, Semester 1

This course represents the final collaborative theatre work of the cohort. The character of the production will depend upon the further developmental needs of the group at that time – for instance, it could take the form of a devised Theatre-in-Education piece to be toured through schools, if co-operative creation and the educational nexus were considered the most important areas to develop further. Or it could be a classic production, or an interdisciplinary performance piece. The production work will grow out of continuing drama training, that is out of processes that will be valuable beyond the context of the immediate performance. It will also be theorized and subject to critique and review to place it firmly in the arena of work-in-progress, however much it is, at the same time, aiming to be a polished topping-out ceremony.

**AAE101 Introduction to the Study of Language**

AUs: 3, Prerequisites: NIL, Semester 1

This course comprises a basic introduction to the study of language, of English, and of applied linguistics. It provides an overview, with basic terminology, of the major branches of language, investigating the nature, history and structure of English, and how language relates to the mind, society, and education. It provides the basis of investigation in subsequent courses. Throughout the course, the connections between the various branches are emphasized.

**AAE102 Language in Context**

AUs: 3, Prerequisites: NIL, Semester 2

The major aim of this course is to make student teachers systematic and critical observers of language as they use and encounter it in different contexts. It will examine spoken and written texts across a variety of settings and for a wide range of purposes. By providing student teachers with a beginner's framework and metalanguage for talking about texts, interactions and social context, the course will enable them to appreciate how language works to enable purposeful communication in context, but also to understand how it often works to cover underlying purposes and values. The course is organized around specific weekly small-scale tasks, where student teachers apply and fine-tune the framework and concepts provided to texts which feature in their everyday and professional/academic life, and which, for future teachers, are likely to be relevant to their pupils.

**AAE103 Understanding the Sounds and Words of English**

AUs: 3, Prerequisites: NIL, Semester 2

This course will introduce the basic concepts of English morphology and then consider the pronunciation of English words. Student teachers will become thoroughly familiar with the IPA, to enable them to read the phonetic



transcription in dictionaries and also describe features of their own speech. In addition, they will be introduced to sound-letter correspondences, to provide a foundation for the teaching of reading. The course will discuss the rules for the pronunciation of suffixes, and the influence of derivational suffixes on word stress. Finally, the basic patterns of intonation will be introduced, including the location of sentence stress and the contribution of intonation to discourse structure.

#### **AAE104 Exploring the Grammar of English**

AUs: 3, Prerequisites: NIL, Semester 1

This course introduces grammar as the study of the different parts of the English sentence and how these parts relate to each other. It covers the full range of units – the individual *words*, which combine with other words to form *phrases*, which, in turn, combine with other phrases to form *clauses*. The course draws attention to the key features of the major constituents of the English sentence, and the various functions they perform. Student teachers are also given a brief introduction to the two main approaches to the study of grammar – the formal and the functional.

#### **AAE201 The Social Variation of Language**

AUs: 3, Prerequisites: NIL, Semester 1

This course introduces student teachers to basic concepts in sociolinguistics, including socially determined variation in style and register; language varieties reflecting social class, gender and ethnicity. Topics also include investigations of factors influencing language choice in bilingual societies, as well as related phenomena such as code-mixing and code-switching. Issues such as language maintenance and language shift, the emergence of new language varieties such as pidgins and creoles, and the impact of globalization and new communicative orders on the status of languages will also be covered.

#### **AAE202 Language Meaning and Use**

AUs: 3, Prerequisites: NIL, Semester 1

This course looks at the meanings of English and how we use meaning to represent and interact with reality and other people, from word to discourse level, and in contexts of real interaction and use. It will consider the nature of meaning, different types of meaning, relationships between meaning and form, the nature and characteristics of words, different types of word, how words are linked by different meaning relationships, how meanings and words change over time, how we use metaphor to create new meanings, the role of dictionaries, how computer corpora can provide information about meaning, words, idioms, grammar and use, how meanings function in spoken and written discourse, how we use meanings and meaning patterns to construct different kinds of text, and how we can use meanings and words conventionally and creatively, as rule and imaginative resource.

#### **AAE203 Language Acquisition and Development**

AUs: 3, Prerequisites: NIL, Semester 2

This course examines theories and issues of language learning from both psycholinguistic and sociolinguistic perspectives. It introduces important concepts about how languages are learnt and used in society. Making links between psychological and social factors, the course considers the normal path of development for English monolinguals and bilinguals at home and in school. It highlights features of English language development in primary and secondary schools in multilingual societies such as Singapore. Such knowledge can help teachers understand key factors that influence language learning and make informed decisions about instruction.

#### **AAE231 The Role of Language in Education**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course explores the centrality of language in education, where it is both the medium and the message. Through language the process of teaching and learning takes place, and one of the principal aims of education is to foster student teachers' ability to use language. Among the key questions raised are the following: What is the relationship between language and learning, and how can teachers use language effectively to promote learning? Which language, or types of language, should be taught in school and why? Why do some students learn the language, or types of language, of schooling more readily than others?

#### **AAE232 Analysing Text**

AUs: 3, Prerequisites: NIL, Semester 2

This course builds on earlier courses concerned with language, meaning, discourse and text, and emphasises *semiosis* – meaning-making – and the semiotic resources available to users. The course will explore the relationships between texts and contexts, people and contexts, and people and texts, and involve analysis of spoken, written and visual discourse, in order to understand and appreciate their characteristics, similarities and differences, the roles they play in our everyday lives, and their importance in educational contexts.

#### **AAE233 Language and Literacy**

AUs: 3, Prerequisites: NIL, Semester 2

This course introduces student teachers to the ways in which definitions of and research on literacy have changed in recent years from static, unidimensional understandings to views of literacy as diverse in nature and as sets of situated social practices inextricably linked to culture and societal structures. Readings and discussion focus on the diverse nature of literacies across time and space and different communities, and the social, cognitive and linguistic aspects of becoming literate. In each area, the concepts and findings of the readings will be linked to literacy development and teaching in the multiracial and multilingual Singapore context.

**AAE234 The Structure of Singapore English**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course examines the structure of Singapore English: its grammar, morphology, phonology, lexis and discourse. This is achieved by examining Singapore English as a new variety of English in its own right, and also by comparison with standard international English. Throughout the course, student teachers will carry out investigations of their own variety of (Singapore) English, and relate these to issues and practices of the use of the informal variety of Singapore English in Singapore schools.

**AAE331/431 An Introduction to Systemic Functional Grammar**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course explores the structure of English in context. It introduces key concepts from Michael Halliday's systemic functional grammar, and examines in detail the interpersonal, experiential and textual organization of texts. This course focuses on the broad functions of language, and equips student teachers with the knowledge to account for how language is used in a particular way.

**AAE332/432 Topics in Phonetics/ Phonology**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course provides an in-depth description of the vowel, consonant, stress, rhythm and intonation systems of English. It will include an overview of phonological theory, including a detailed study of phoneme theory as well as an introduction to generative phonology. Student teachers will also learn how to measure features of their own speech, and they will be required to compare their findings against existing research on Singapore English. Finally, student teachers will investigate and report on their own intonation and other patterns of their discourse.

**AAE333/433 Topics in Pragmatics**

AUs: 3, Prerequisites: NIL, Semester 1/2

A study of the ways in which meanings are generated in context. It explores the philosophical aspects of meaning in Speech Acts, Gricean Maxims, Relevance Theory, Conversational Structure and the coherence of talk, the relations between pragmatics and society, and the application of pragmatics to discourse.

**AAE334/434 Lexicology and Lexicography**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course focuses on the history, design and use of dictionaries, and innovations in the design of lexical resources for language learners. It explores the processes by which lexicographers compile dictionary entries and also the factors which affect the type, extent and focus of the information presented in language learning resources for language learners. A feature of the course is a hands-on review of corpus-based methods in language description for compiling dictionaries and other reference resources.

**AAE335/435 Critical Discourse Analysis**

AUs: 3, Prerequisites: NIL, Semester 1/2

Critical Discourse Analysis or CDA, for short, is an approach to discourse analysis which looks at issues of power and ideology and the ways by which they are reproduced through language. This critical approach to discourse analysis will explore areas like media discourse, gender discourse and political discourse to uncover the linguistic processes that underlie the ideological construction of contemporary society. CDA's analytic method relies heavily, though not exclusively, on Halliday's functional grammar, and so student teachers with a background knowledge of functional grammar may have an advantage.

**AAE336/436 English in New Cultural Contexts**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course surveys the socio-cultural and linguistic characteristics, the roles and functions of new varieties of English in societies around the world. The main objective is to increase student teachers' understanding of the characteristics of New Englishes and the development of new meanings and structures in new cultural contexts. A range of issues related to the spread of English, such as linguistic human rights, language death, decolonisation and the search for cultural roots in new literatures in English will also be examined.

**AAE337/437 Understanding Reading**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course will incorporate theoretical and research foundations of past years as well as new conceptualizations of reading and literacy. This requires an understanding of various models of reading and literacy processes. The concept of reading and comprehension has undergone massive change in several ways. The text is viewed as a multiple, intertextual construct. The reader is seen to play a central role in the process of constructing meaning. Context as realized by the constraints of task, purpose and situation is given an important role emphasizing the social dimension of the learning situation. Student teachers will develop an understanding of comprehension and the processes of reading embedded within a learning framework that stresses cognitive development and the social context of learners. Aspects of language processes connected with initial encounters with print, social context and culture, the comprehension process and the role of metacognition in the development of reading will form the focus of this course.

**AAE338/438 Understanding Writing**

AUs: 3, Prerequisites: NIL, Semester 1/2

Student teachers will be introduced to significant research and theoretical perspectives on the nature of writing (composing) and the development of writing competence in school and non-school contexts. They will use the research and theoretical models to explore the nature of writing and writing tasks in local school and non-school situations. Implications for the teaching/learning of writing will be discussed.

**AAE339/439 Multiliteracy and the Language Classroom**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course examines the 'what' and 'how' of language and literacy teaching in the context of new and emerging communication channels, forms of message arrangement and technologies and a rapidly changing English language. Specific issues discussed are: Does knowledge remain the same when it is represented in language, image, gesture or other modes? Can image do what writing does, or writing what image does? How do new forms of message arrangement in texts and genres affect the processes of reading and writing? Does learning happen differently when we engage with knowledge through image or language, and are taught in traditional or computer-mediated classrooms? The course also looks at examples of language classrooms which show how the increasingly complex demands of language and literacy pedagogy in contemporary times can be effectively addressed.

**AAE340/440 Bilingual Education**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course includes an exploration of issues in societal bilingualism. It will include discussion on models of bilingual education, the roles and functions of languages, eg official, mother tongue languages in multilingual communities. Issues related to linguistic minorities, socio-psychological aspects of bilingualism: attitudes to language, culture, identity & ethnicity, factors influencing language maintenance and shift, and the politics of language policy planning will be examined.

**AAE341/441 Using IT in the Language Classroom**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course focuses on the use of Information Technology (IT) in the study, as well as the teaching, of the English language. We explore how various themes of language and learning can meet the challenges of the Digital Age.

**AAE342/442 Language Testing**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course provides an introduction to fundamental concepts in language test development, including validity, reliability, washback and ethical testing. Through the creation and trialing of a language test, student teachers will discover the practical implications of the theoretical aspects covered in the course.

**AAE343/443 History of Modern Linguistics**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course surveys the developments and broad directions in linguistics from the 19th century to the present day. It describes the tenets of the major schools of linguistics and their analytical approaches. The intellectual atmosphere within which various ideas were evolved, and the prime architects of each school – Saussure, Bloomfield, Chomsky, among others – are also discussed.

**AAE344/444 Comparative Linguistics and the Theory of Translation**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course provides an overview of the theories and techniques of translation, focusing on issues that influence the translation of texts from the student's home language into English and comparisons of the structure of English with one of the other languages of Singapore.

**AAE345/445 Language Across the Curriculum**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course emphasises the crucial role of language in learning, the important role that teachers play in the thinking and learning processes, and progress, of their students at primary and secondary levels, developing awareness of, and knowledge about, the language of subjects across the curriculum. The course will explore the use of language in primary and secondary subject classrooms, the nature of the texts and textbooks used in schools, and the ways in which theories of language and learning can be put into practice so that teachers can address the learning needs of their student teachers more effectively and confidently.

#### **AAE346/446 Special Topics in Language and Education**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course will focus on subjects, key texts or persons that have played an important role in the study of language and education. Because of its specialised nature, the course will give student teachers a chance to explore a topic or the work of an educational linguist in greater depth. Topics vary with the instructor and the interests of student teachers.

#### **AAE347 Research Methods**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course examines the various research methods employed in the study of English Language. It aims to provide basic knowledge and skills needed for student teachers to identify and define a significant issue in an area of English Language or Applied Linguistics and to decide on the appropriate theoretical framework and methodology to investigate it. Student teachers will be familiarised with different types of research design, quantitative and qualitative, and their strengths and limitations. As they are drafting their research plan, student teachers will also discuss what constitutes effective academic argumentation and style in their area of study.

#### **AAE447 Independent Reading and Research**

AUs: 3, Prerequisites: AAE347, Semester 2

This course provides an opportunity for undergraduate student teachers to do independent reading and research in a topic of their choice in English Language under the guidance of an ELL staff member. Student teachers use this opportunity to explore an area of study or issue that relates to their academic and/or professional interests. Often, new tools, concepts or strategies learned during the first three years of study spark an interest in exploring further applications of ideas. This independent study course is an excellent opportunity for focused, personalised reading and research. Subject to the approval of the Academic Group, student teachers will select a topic and will be matched with a research mentor.

#### **AAR101 Speaking of Narrative**

AUs: 3, Prerequisites: NIL, Semester 1

As the first step in the education of a teacher of Literature, this course will introduce the student teacher to some of the modes of storytelling which have arisen through the ages from narrative poetry fiction and drama to more recent developments such as film, television anime, and computer realizations of current events. This is in anticipation of the various types of narrative structures a student teacher will have to deal with in the classroom.

#### **AAR102 Survey of British Literature I: Chaucer, Shakespeare & the Renaissance**

AUs: 3, Prerequisites: NIL, Semester 1

This course surveys the first 'half' of the English literary tradition, a necessary step in the preparation of a teacher of Literature. The selection of authors and texts will introduce student teachers to literary periods, movements and aesthetics, and the particular emphasis will be Chaucer, Shakespeare and readings from the Renaissance. The three major literary genres of prose fiction, poetry and drama will be highlighted.

#### **AAR103 Survey of British Literature II: 17<sup>th</sup> Century to Modernism**

AUs: 3, Prerequisites: NIL, Semester 2

This course surveys the second 'half' of the English literary tradition, continuing from where *Survey* leaves off in the preparation of a teacher of Literature. The selection of authors and texts will continue to introduce student teachers to important literary periods, movements and aesthetics. Once again the three major genres of prose fiction, poetry and drama will be well-highlighted even as this course is mindful of its emphasis on historical survey.

#### **AAR104 Reading Strategies**

AUs: 3, Prerequisites: NIL, Semester 2

Student teachers will be given a selected number of texts and taught how to subject them to multiple readings, using a variety of approaches. They will start by mapping the semiotics of a text and understanding how it works as a system of signs before learning how to read gender biases and assumptions in its use of figurative language and narrative perspective. They may also learn how to disentangle the text's ideologies, its class and other affiliations, and read critically into its gaps and absences. Student teachers will also be introduced to some basic

psychoanalytical strategies of reading and learn how to relate a text's discourse to the wider world of intellectual and cultural practices outside it. By the end of the course, student teachers will be able to relate to literature as social text and view reading as social practice, and be well prepared to proceed to the second year of their education as teachers of Literature.

**AAR201 American Literary Tradition**

AUs: 3, Prerequisites: NIL, Semester 1

This course examines the definition of the term "American", what ideas and ideals are associated with its appropriation as a descriptive for the country, the United States, and how those ideas and ideals have been enunciated in American literature through the end of the nineteenth century. The readings will include selections from some of the following writers: Winthrop, Mather, Wheatley, Franklin, Cooper, Poe, Hawthorne, Melville, Emerson, Fuller, Thoreau, Dickinson, Whitman and Twain.

**AAR202 Literature, Education and Culture**

AUs: 3, Prerequisites: NIL, Semester 1

This course explores what the relationship might be between contemporary culture and literature education in the secondary school. Central to the challenge of literature education is the ongoing rapid growth of the mass media, youth-targeted consumption culture and the change in gender expectations of men and women, along with the more 'traditional' problems of youth gangs and how literature in English should be taught in a multi-ethnic/multi-lingual context. The social category 'youth' itself is affected by such cultural changes. Given these challenges, the roles of cultural literacy and complex written texts remain important as they are linked with the educational potential of developing creativity, strong identity and expanded formal and informal learning capacities. However, for literature education to be effective, teachers cannot ignore *both* the challenges *and* opportunities offered by contemporary culture. This course investigates the implications of contemporary culture for education, and the potential uses of youth culture as foci for the teaching of literature and the development of a more general cultural literacy.

**AAR203 Singapore and the Region in Literature**

AUs: 3, Prerequisites: NIL, Semester 2

This course will explore cultural and historical connections and shared ethnic traditions in the literatures of post-independence South-east Asian nations and Singapore. Using translated works as well as writing in English, student teachers will look, for example, at the modern rewriting of Hindu and Malay myths in the region, and examine the literary treatment of immigrant identities. It could also look at the modern woman's struggle against Asian patriarchal cultures and consider similarities and differences in these nations' literary constructs of modernity and their engagement with globalisation.

**AAR231 Shakespeare and Early Modern Drama**

AUs: 3, Prerequisites: NIL, Semester 1/2

The course focuses on the breadth of Shakespeare's writing, covering his major plays as well as his poetry. Shakespeare and his work will be studied in the context of Elizabethan history and culture. Topics might include performance, identity, personal and political power, the effects of economic expansion and/or the roots of empire.

**AAR232 The Restoration to Blake**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course provides an introduction to the literature of the Restoration and Eighteenth Century, excluding novels. Primary attention will be given to major poets (including John Dryden, Alexander Pope, Samuel Johnson, and William Blake) as well as essayists and prose satirists (especially Johnson and Jonathan Swift). Particular attention will be given to the role of the author as social actor and commentator.

**AAR233 17<sup>th</sup> Century Poetry and Prose**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course studies major non-dramatic literature of the period with primary attention given to the works of John Donne and John Milton. Topics include metaphysical poetry (Donne, George Herbert, Andrew Marvell et al.), cavalier poetry (Ben Jonson, Thomas Carew, Richard Lovelace et al.), and the interaction of those traditions on Milton. The course may also include a study of the emergence of popular literature in John Bunyan's *Pilgrim's Progress*.

**AAR331/431 Romanticism**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course considers Romanticism as an intellectual and aesthetic movement and looks at the work of the major writers such as Blake, Byron, Shelley, Southey, Keats, Coleridge, and Wordsworth. Issues of style and elements of Poetry including form and imagery will be considered. Issues explored will include the nature of revolution, the sublime, Nature, the representation of the past, romantic love, travel, and exoticism.

**AAR332/432 Victorian Poetry and Prose**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course looks at a selection of poetry and prose and considers it in relation to such major concerns and cultural pre-occupations of the Victorian period as the woman question, colonialism, class struggle, industrialisation, social ills, the changing landscape, and the division between private and public spheres. Questions of poetic prose form will be integral to the course. Poetic works to be studied may include those of Robert Browning, Elizabeth Barrett Browning, Christina Rossetti, Alfred Tennyson, Matthew Arnold, and Thomas Hardy. Prose writing by Thomas Carlyle, Thomas Macaulay, John Stuart Mill, John Ruskin and William Morris will also be considered.

**AAR333/433 The English Novel: Jane Austen to the 19th Century**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course looks at the nineteenth-century English novel and the contribution to the form's development by major writers like Jane Austen, the Brontes, Charles Dickens, Wilkie Collins, George Eliot, Elizabeth Gaskell, William Thackeray, and Thomas Hardy. Questions of form, point of view and the conventions of realism will be considered. Other issues to be examined include the trope of the fallen woman, sensation fiction, the place of the writer in Victorian society, serial publication and the material conditions of production.

**AAR334/434 20<sup>th</sup> Century Drama**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course focuses on the seminal figures of the modern dramatic movement in Europe and the USA: Henrik Ibsen, Anton Chekov, August Strindberg, George Bernard Shaw, Eugene Ionesco, Eugene O'Neill and Samuel Beckett, among others. It will examine the ways in which these playwrights rejected conventional theatrical forms as well as look at concerns of subjectivity, gender, and social and cultural identities in response to major shifts in the intellectual life and socio-political climate leading to and during the twentieth century.

**AAR335/435 20<sup>th</sup> Century Poetry**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course begins with an examination of poetry in English as a distinctively international phenomenon. It also considers the impact of the central issues and techniques of the 'classic' modernist poetry of T.S. Eliot, W.B. Yeats and Ezra Pound, among others, on the poetry that follows by writers such as W.H. Auden, Wallace Stevens, Sylvia Plath, as well as late twentieth-century figures such as Derek Walcott. Other issues may include the ways in which feminist and postcolonial concerns, for example, have influenced the development of modern poetry. There will be consideration of how the experimentation with poetic form is related to the poet's thematic and other concerns.

**AAR336/436 Contemporary British Literature**

AUs: 3, Prerequisites: NIL, Semester 1/2

Working from the conviction that the study of literature is without equal in providing an understanding of other cultures, this course will offer a grounding in some of the fundamental attitudes, mores, and areas of dispute of contemporary British society. The course will survey a range of contemporary fiction poetry and drama of the British Isles. Attention will be given to such issues as regional diversity – for example, the differences between the literatures of England, Northern Ireland, Scotland, and Wales – and the impact of the literatures produced by immigrants and their descendants after World War II.

**AAR337/437 Contemporary American Literature**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course examines twentieth-century American literature through the often-cited argument that all American literature can be traced back to Mark Twain's *The Adventures of Huckleberry Finn*. Readings will include fiction, poetry and drama and non-fiction prose. Writers may include some of the following: Cummings, Hemingway, Baldwin, Stevens, Steinbeck, O'Neill, Faulkner, O'Connor, McCullers, Miller, Williams, Frost, Kingston, Vonnegut, Coover, Pynchon, Morrison.

**AAR338/438 Film Studies**

AUs: 3, Prerequisites: NIL, Semester 1/2

This is basically a methods and materials course in film criticism. It aims to teach student teachers how to *read* a film by introducing them to the tactics of practical film criticism, the basic language of the discipline, and the major critical theories. Some film history will be included but that is not the main focus of the course. The selection of films to be studied is at the discretion of the instructor and is liable to change from year to year.

**AAR339/439 Adolescent Literature**

AUs: 3, Prerequisites: NIL, Semester 1/2

Much of what society intends in terms of identities and values can be inferred from writing for the child and what he/she is made out to be in such writing. This course examines representative texts for an in-depth understanding of

the didactic and cultural aspects of socialisation. Texts include the folk tale, books used for language arts teaching, and canonical and contemporary writing for adolescents.

**AAR340/440 Understanding Critical Theory**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course is a survey of some of the currents of theoretical thinking which have proven to be influential in the study of literature. The range of 'schools' covered may include: Leavisite or humanistic approaches to criticism; Marxist and post-Marxist criticism and theories; psychoanalytical criticism; cultural criticism and theories of mass culture; structural and poststructural theories; postmodernist theories of the arts, writing and culture. Major figures which this course will focus on may include Claude Lévi-Strauss, Jacques Derrida, Jean-François Lyotard, Michel Foucault and Fredric Jameson. Understanding the contemporary debates on literature and reading will affect the way we read and teach literature in the classroom.

**AAR341/441 Post-colonial Theory and Literature**

AUs: 3, Prerequisites: NIL, Semester 1/2

Selected readings of theory and literature will introduce student teachers to salient topics concerning post-colonial culture, such as the paradoxes of imagining post-colonial identity in the former master's language as well as the identity problems that stem from contemporary global movements of peoples. Student teachers will also study the ways in which selected literary texts from the Indian subcontinent, Africa, and the Caribbean, as well as the Asian diaspora, among others, dismantle colonial fictions of the racial 'Other' and imagine new national, transnational and ethnic identities for their communities. The course will prepare student teachers to tackle in the classroom, important cultural and social concerns raised today within the new context of globalisation and transnational identities.

**AAR342/442 Literature and Feminism**

AUs: 3, Prerequisites: NIL, Semester 1/2

The course brings women's issues to bear on the study of literature. Student teachers will begin by learning how to read literature from a female subject-position before being introduced to women's writing as a genre. They will scrutinise the gender biases in writing by the literary 'masters' and ask whether both literature and literary criticism are patriarchal in character. Course readings will range from canonical male texts, to women's novels and poetry and include salient writings from the Women's Movement.

**AAR343/443 Approaches to Cultural Studies**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course introduces the study of culture beyond the literary text. It considers the development of British cultural studies and the development of the idea that 'culture is common'. The range of issues covered may include: the 'usefulness' of high culture in an industrial society, resistance against hegemonic notions of culture and society, the development of the concerns of gender, race and class in literary study, the concerns of mass culture in consumption-oriented societies, the emergence of youth culture, counter cultures and other sub-cultures. This course will also consider the question of the relevance of cultural studies in contemporary Asian contexts. Major figures focused on may include Raymond Williams, Stuart Hall, Paul Gilroy, Walter Benjamin and Theodor Adorno.

**AAR344/444 Developments in Anglophone Literatures**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course will consider developments in Anglophone literary traditions as they developed outside the United Kingdom, with a focus on texts from a particular region. These could include Australasia, South Asia, the Caribbean, North America and Africa. The influence of native oral literary traditions, Magic Realism, and challenges to Western conceptions of history could be among developments considered. The course will introduce student teachers to the cultural imaginary of a region.

**AAR345 Research Methods in the Study of Literature in English**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course examines the various research methods employed in the study of Literature in English. It aims to provide the basic knowledge and skills needed for student teachers to identify and define a significant issue in an area of literary-cultural study and to decide on the appropriate theoretical framework and methodology to investigate it. Student teachers will be familiarised with different types of research design, and bibliographic research, along with their strengths and limitations. As they are drafting their research plan, student teachers will also discuss what constitutes effective academic argumentation and style in their area of study.

**AAR446 Independent Reading and Research**

AUs: 3, Prerequisites: AAR345, Semester 1

This course provides an opportunity for undergraduate student teachers to do independent reading and research in a topic of their choice in Literature in English under the guidance of an ELL staff member. Student teachers use this

opportunity to explore an area of study or issue that relates to their academic and/or professional interests. Often, new tools, concepts or strategies learned during the first three years of study spark an interest in exploring further applications of ideas. This independent study course is an excellent opportunity for focussed, personalised reading and research. Subject to the approval of the Academic Group, student teachers will select a topic and will be matched with a research mentor.

**AAQ101 Principles of Nutrition**

AUs: 3, Prerequisites: NIL, Semester 1

An overview of how macro- and micro-nutrients affect health, disease, energy balance and weight control. Various aspects of food composition and its relationship to food choices and subsequent impact on health issues. The principles of digestion, absorption and metabolism. The application of nutrition principles to the needs of individuals and groups at different stages in the life cycle. Global issues such as food safety, food technology and world hunger.

**AAQ102 Resource Management for Individuals and Families**

AUs: 3, Prerequisites: NIL, Semester 1

This course focuses on the application of management principles to individuals, household and families, management as a process of using resources to achieve goals. The basic concepts of what is management, why manage, who manages, values, attitudes, goals, resources, decision making and problem solving, managing human resources, work and family, stress, environmental resources time and finances.

**AAQ103 Textiles Study**

AUs: 3, Prerequisites: NIL, Semester 2

The study of textile fibres according to their origin, structure, physical and chemical properties. Identification of fibres (burning tests, microscopic appearance and reactivity with reagents used in the home). Characteristics of yarns and fabrics in relation to production processes that affect the finishing, dimensional stability and serviceability.

**AAQ104 Food and Society**

AUs: 3, Prerequisites: NIL, Semester 2

This course focuses on the patterns, customs and management of foods in the context of diverse cultural populations. The influences of history and origins, culture and religions on foods, the impact of geographical and economic factors on food patterns, eating habits, preparation of traditional foods from around the world, and the impact of these on the Singapore food scene and marketplace.

**AAQ201 Food Management and Preparation**

AUs: 3, Prerequisites: NIL, Semester 1

The study of nutrient values of specific foods and changes of nutrient content of foods during food preparation. Ways of minimizing food loss, preventing food spoilage and food-borne poisoning will be discussed. Integration of knowledge and skills in food science and nutrition to food choice, selection, preparation, storage, presentation and evaluation of a variety of meals and food products that are nutritious, appealing and balanced. Emphasis on food preparation and food investigation skills from the perspective of the Singapore Healthy Diet Pyramid.

**AAQ202 Creative Textiles**

AUs: 3, Prerequisites: AAQ103, Semester 1

The study of aesthetic principles involved in the selection of colour, texture, line and shape and their application in the design and production of clothing and other textile products. Developing creativity and production of objects through the use of different materials and surface decorative techniques, including hand and machine embroidery.

**AAQ203 Consumer Issues**

AUs: 3, Prerequisites: AAQ102, Semester 2

This course focuses on the basic economic principles as they apply to the consumer marketplace. Consumer purchase decisions with a specific focus on consumer issues in the areas of food, product safety, housing and family finance. A study of consumer problems such as consumer rights, responsibilities and remedies in the context of purchase decisions.

**AAQ204 Entrepreneurship in Family and Consumer Sciences**

AUs: 3, Prerequisites: AAQ101,103,201,202, Semester 2

The focus of this course is on the development of business ventures related to food and textiles. An introduction to business applications and how they apply to an entrepreneurial venture. Topics include how a concept is taken from a business plan to a start up in the first phases of the entrepreneurial process, idea conception, entrepreneurship, business planning, market research, entrepreneurial opportunities and strategies.

**AAQ301 Food Science and Principles**



AUs: 3, Prerequisites: NIL, Semester 1

This course illustrates the principles of food science, emphasising the functional, physical and chemical properties of food constituents and their behaviour in production, processing, preparation, selection, evaluation, storage and usage of food. This investigative approach to the underlying principles provides content knowledge and develops process skills and experiments that can be applied to teaching at secondary school levels.

**AAQ302 Consumer Research Methods**

AUs: 3, Prerequisites: AAQ102,203, Semester 1

This course focuses on the analysis of consumption patterns and behaviour of consumers in the marketplace. Data collection methods are explored in the context of family and individual purchase decisions. A range of quantitative methods with emphasis on the use of simple regression analysis and correlation to explain consumer behaviour.

**AAQ303 Clothing and the Consumer**

AUs: 3, Prerequisites: AAQ103, Semester 2

The focus of this course is on introducing clothing issues as they relate to the consumer. The function of clothing will be explored by investigating the fibre content and fabric structure in relation to construction techniques. Clothing issues will be explored through surveying market trends.

**AAQ304 Applied Nutrition**

AUs: 3, Prerequisites: AAQ101, Semester 2

This course covers the study of nutrition relating to physiological adaptations and nutritional needs through the lifespan, included are the translation of nutrients in food terms, menu adaptations for specific groups and effects of various food preparation on the nutritive value of foods. Factors relating to food choice/selection to meet nutritional requirements and decision making about current nutrition-related issues will be discussed.

**AAQ401 Individual Project with Industrial Attachment**

AUs: 3, Prerequisites: NIL, Semester 1

The focus of this course is on reviewing the family and consumer science philosophy and how it has been anchored in businesses. Practice will be followed by a consideration of the ways in which the individual consumer and the family as a consuming unit are the driving forces behind a variety of businesses/industries relevant to the content areas of family and consumer sciences.

**AAG101 Elements of Physical Geography**

AUs: 3, Prerequisites: NIL, Semester 1

Global occurrences of natural phenomena and the physical environment associated with such events. Studying Earth as a multi-dimensional and dynamic system. Understanding of the various processes operating within the physical environment and their inter-relationships.

**AAG102 Elements of Human Geography**

AUs: 3, Prerequisites: NIL, Semester 1

Introduces some fundamental concepts of human geography concerning human characteristics of place, factors leading to shaping of the world's cultural, spatial, political and development patterns. Culture components, cultural change, bases of spatial interaction, migration and behaviour, population change, ethnic geography, systems and evolution of rural and urban settlements. Also political ordering of space, and impacts of globalisation on development.

**AAG103 Techniques in Geography**

AUs: 3, Prerequisites: NIL, Semester 2

This course introduces the basic techniques in geography for the collection, analysis, interpretation and presentation of geographical information. It covers quantitative, qualitative and cartographic methods of investigation through lectures, tutorials/workshops and fieldwork. Hands-on experience with basic Geographical Information Systems will also be introduced. Student teachers will be expected to participate in fieldwork activities.

**AAG104 Singapore in Asia**

AUs: 3, Prerequisites: NIL, Semester 2

This course integrates geographical skills and different study strands – human, environmental and technical – in the study of Singapore in the Asian region. The global positioning of Singapore and the contemporary challenges to development that it faces in a highly competitive and fast changing global environment will be the framework for the study of issues and problems that have emerged - SARS, bird flu, haze, terrorism, implications of cross-straits relations between China and Taiwan, economic liberalization in China and India among others.

**AAG231 Humid Tropical Environments**

AUs: 3, Prerequisites: NIL, Semester 1/2

Study of the physical environment of the humid tropics. The geomorphological and hydrological processes operating within the region form the main platform. Local and regional physical attributes and examples are analysed around the key concepts and the interrelationships between the operating processes and the resulting landforms are discussed. Elements of fluvial sedimentation and applications of urban geomorphology under humid tropical environments are included. Techniques applied to geomorphological research and analysis of field data are integral parts of the coursework. Field trips are an essential component of the course.

#### **AAG232 Biogeography**

AUs: 3, Prerequisites: NIL, Semester 1/2

Deals with biological processes and concepts that are basic to the understanding of the complex interrelationships between the inorganic and the organic world. After the initial groundwork on soils and their properties, the course will deal with plants, as these are the primary food producers which form the essential link between humans and the physical environment. The course also deals with the reciprocal relationships between biogeographic processes and humans. Field trips and laboratory work are essential to this course.

#### **AAG233 Climate and Climate Change**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course will examine atmospheric processes that are involved in anomalous and adverse weather conditions, climate zones of the tropics and trans-boundary atmospheric issues and global climate change. The focus of the course will include discussion on impacts and management responses to climate changes.

#### **AAG234 Coastal and Ocean Systems**

AUs: 3, Prerequisites: NIL, Semester 1/2

Describes the landforms and processes operating along the land-sea interface as well as in the oceans. Challenges facing coastal and ocean environments. Topics covered include the evolution of coastal landforms, history of sea level changes and shoreline response, current state of the coastal and ocean environment and coastal management initiatives. Particular attention will be given to the coastal environments of the Straits of Malacca and the Singapore Straits and in field techniques.

#### **AAG241 The New Global Economy**

AUs: 3, Prerequisites: NIL, Semester 1/2

Global patterns of resource production, consumption and distribution. Regional disparities in sectoral performance (primary, secondary, tertiary). Problems of inequality and poverty. Impacts of globalization and the phenomena of spatial convergence and divergence of global economic development. Inter-regional and intra-regional disparities in growth and development. The roles of the states, supra-states, transnational corporations, local authorities and non-governmental organizations. Technology change and economic development, the North-South problems and digital divide. The limits to growth and development. The knowledge-based economy in the ICT age.

#### **AAG242 Urban Development and Change**

AUs: 3, Prerequisites: NIL, Semester 1/2

Urban concepts are introduced and defined on the basis of three selected elements of contemporary urban geography: spatial, social and economic. These fundamental characters are translated into three respective key areas and explored in greater details: city as environment (physical and land use change, settlement, transport); city as people (urbanization, suburbanization, poverty and segregation); and city as economy (industrial, post-industrial, world city developments). Worldwide relevant urban issues including those from Singapore are used as teaching and class reflection materials.

#### **AAG243 Space, Place and Culture**

AUs: 3, Prerequisites: NIL, Semester 1/2

Examines the cultural turn in geography that has led to a renewed interest in senses of place, identity and meaning, rather than deterministic views of the world that do not map neatly onto the experience of everyday life. The new cultural geography has been enriched by a variety of approaches and interdisciplinary connections, particularly from debates in feminist, postcolonial and cultural studies. The evolving meanings and significance of gender, ethnicity and race will be discussed in a Southeast Asian context.

#### **AAG244 Population and Sustainability**

AUs: 3, Prerequisites: NIL, Semester 1/2

Population trends in the world today provide a confusing and contradictory mix of policy issues that are at the centre of the discussion in this course. While affluent countries in Asia and the West face declining fertility rate and ageing populations with resulting policy packages that are pro-natalist, there are societies which have been focused on addressing rapid population growth rates. In an age of global or international migration flows, it is not surprising to

believe demographers' views that if the challenge to sustainability concerns in the last millennium has been population growth, then the issue today is the spatial distribution of such population. This course considers global sustainability concerns and changing population trends like the demographic transition in advanced industrialized societies.

**AAG245 Political Geography**

AUs: 3, Prerequisites: NIL, Semester 1/2

This is a course that engages with the politics of space and place-making. The course will consider how politics has resulted in contestation for space and spatially defined life in societies in terms of social integration as well as other outcomes such as, fragmentation and divides. Globalisation increasingly challenges the territorial meanings of nation-states and the process of nation-building. While seeking to raise consciousness of the importance of geography in the understanding of politics at the global and everyday levels, the course will also highlight the meanings of citizenship and the contestation for both space and territory in today's world.

**AAG251 Introduction to Geographical Information Systems**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course provides conceptual and technical foundations of geographical information systems (GIS). It equips student teachers with basic skills for collecting, storing, manipulating, analysing and presenting geographical data and information using GIS, and for the use of GIS in support of school teaching. It is laboratory-based, giving hands-on experience of GIS software.

**AAG252 Introduction to Remote Sensing**

AUs: 3, Prerequisites: NIL, Semester 1/2

An introduction to the fundamentals of remote sensing in terms of image acquisition procedures and interpretation skills which will provide a basis for selecting and analysing image data sets to address specific geographical or environmental issues. Both lectures and tutorials emphasise the applied and practical aspects of remote sensing principles and image interpretation.

**AAG331 Catchment Management and Conservation**

AUs: 3, Prerequisites: AAG231, Semester 1/2

Primary concepts of catchment management and conservation. Problems of environmental degradation in the face of increasing urban development. Catchment management as an integrated systems approach. Concepts relating to conservation and management of natural systems with a distinct emphasis on their application. Environmental Impact Assessment and monitoring.

**AAG332 Ecosystem Dynamics**

AUs: 3, Prerequisites: NIL, Semester 1/2

Understanding of ecosystem essentials. Ecosystem concept and inter-relationships between inorganic and organic worlds. Concepts of vegetation ecology such as plant communities, migration, vegetation dynamics, competition are covered. Local ecosystems, such as the tropical rainforest, and the mangroves. Urban vegetation. Field trips to areas of biogeographical interest as an essential component of the course.

**AAG333 Resource and Environmental Management**

AUs: 3, Prerequisites: NIL, Semester 1/2

Introduces current environmental issues and concerns, principles underlying the various major global environmental initiatives starting from the Stockholm Earth Summit, builds on some topics covered in environmentally related courses in earlier years. Topics covered include Agenda 21, sustainable earth, environmental impact assessment and specific resource (such as water) and environmental management from the global to local scale.

**AAG341 Dynamics of Industrial Location**

AUs: 3, Prerequisites: AAG241, Semester 1/2

Conventional and contemporary theories in explaining the location of industrial activities and the changing patterns from global to local scales. Changes in manufacturing production, processes, management and organization – from the era of Industrial Revolution to the ICT-KBE age. Geographic variations in distribution of manufacturing industries. The roles of small and medium-sized and transnational firms. Locational conditions and changing production factors – the new supply chain. The impact of technological changes, government policies, foreign direct investment, mobility of production factors. Industrial transformations and new industrial spaces and their implications.

**AAG342 Feeding the World**

AUs: 3, Prerequisites: NIL, Semester 1/2

The food chains and the natural environments. Food production and consumption and regional disparities – from Green Revolution to Gene Revolution. Food distribution and problems of hunger, famines and malnutrition. Food

manufacturing - producer and consumer services in developing and developed countries, impact of biosciences and life sciences. Food culture – tradition, religion, society, ethnicity and innovations. The culinary delights and etiquette of the oriental, the occidental and the universal. The roles of the states, supra-states and transnational corporations and the impacts.

#### **AAG343 Ethnic Geography**

AUs: 3, Prerequisites: NIL, Semester 1/2

A relatively neglected field within geographical studies of the impact of society on cultural landscapes apart from the introductory sessions incorporated into first year human geography courses, contemporary issues that have arisen since 9'11 highlight the continuing importance of ethnicity and ethnic identities in human as well as global development. This course considers the meanings and interpretations of ethnicity and ethnic identities as well as diversity in the global stage drawing on case-studies of policies that states have introduced to manage multi-ethnicity as well as the ethnic conflicts that have de-stabilised societies and economies in the region and around the world.

#### **AAG344 Transportation Systems and Planning**

AUs: 3, Prerequisites: NIL, Semester 1/2

Historical evolution of transportation, transportation networks and their spatial structure, globalization and international transportation, land use and urban transportation, socio-economic and environment impacts of transportation, methods in transportation analysis and planning, including accessibility measures, transportation modeling, network analysis and resource allocation.

#### **AAG345 City and Regional Planning**

AUs: 3, Prerequisites: NIL, Semester 1/2

The course traces traditions of town planning in industrial Europe, with reference to garden city and new town developments. From basic planning principles, modern urban planning concepts, regulations, policies are examined as an evolutionary process and in different perspectives in both developed and developing worlds. Roles of city and regional planning agencies in managing local and regional problems and in pursuing economic growth, equitable distribution of resources, environmental quality control and sustainable land use. Renewal and modernization of Paris, London, and post-colonial Singapore provides learning examples of planning theories and practice.

#### **AAG351 Applied Geographical Information Systems**

AUs: 3, Prerequisites: AAG251, Semester 1/2

This course equips student teachers with essential GIS skills for geographical problem solving and spatial decision-making. It introduces GIS data collection techniques, such as digitizing and GPS, and spatial analysis techniques, including cartographical modeling, terrain modelling, network analysis and 3-D visualisation. Case studies and hands-on practices allow student teachers to gain experience in the use of GIS in both human and physical geographical studies. By the end of the course, student teachers are expected to be able to appreciate the character and quality of geographical data and the ways in which they can be used in geographical studies.

#### **AAG401 Geographical Methods and Fieldwork**

AUs: 3, Prerequisites: NIL, Semester 1

Geographical issues, techniques and applications in research – both physical and human – are rigorously debated and discussed in the course. Research design, acquisition of data through field surveys, methods of data analysis and report writing are core areas of work done. Field investigations spanning 10 to 14 days are conducted as part of the course and fieldwork sites are located outside of Singapore. Individual academic reports of the field investigations and field data collected are assessed.

#### **AAH101 Film as History**

AUs: 3, Prerequisites: NIL, Semester 1

History does not only include examining the written word. Other mediums, such as film, can be used in looking at the past. This course covers the use of film as a source for exploring the past, and how history has been represented in film. The history of cinema and television is also studied. The emphasis is on empowering student teachers to interpret films in critical and analytical ways, as well as teaching student teachers how films are created. The skills of historical interpretation and writing history are taught. This course is offered to all NTU students.

#### **AAH102 Biography and History**

AUs: 3, Prerequisites: NIL, Semester 1

Biography is one of the most popular and enjoyable ways of reading history. Biographers employ a range of interesting methods in researching their subject, such as psychoanalysis and interviews. Biographies covered range from those of Hitler to Mao. The course studies the life stories of not only the "great" figures of history but also of the "unknown" men and women who also "made history. The skills of writing biography and doing oral history are taught. This course is offered to all NTU students.

**AAH103 Singapore History: The Making of a Global City State**

AUs: 3, Prerequisites: NIL, Semester 2

This course looks at critical stages in the birth, decline and rise again of Singapore as a Global City. Singapore first briefly bloomed in the thirteenth to fourteenth centuries, declined into relative obscurity as a minor Malay port, and then from 1819 entered a new, free-trade and multicultural phase of development. This course takes the story from the early years, through the nineteenth century, to the tumultuous birth of a new nation after the war. It covers the major markers of Singapore history, and the variety of that history, with its experience of development and disaster, conflict and peace, multiculturalism and modernity, and wealth and poverty. It is a History that allows for the perspectives of a variety of people who helped to build Singapore, from the politician and the colonialist, to the prostitute and the opium addict. This course is suitable for NTU students who want a good overview of key points in the historical formation and shaping of Singapore up to 1965, as a multicultural city-state, located in the Malay maritime world, but also becoming first an Imperial and then a Global City.

**AAH104 Dawn of Asian Civilizations**

AUs: 3, Prerequisites: NIL, Semester 2

This course provides an introductory survey of the beginning and the growth of civilizations across Asia from the prehistoric times to 1400 AD. The course begins with a brief study of the early phase of human society before studying the rise of first states and their socio-economic underpinnings. Using innovative technological means and drawing examples from India, Southeast Asia and China in the light of archaeological evidence and other historical records, this course will discuss major cultural developments such as the rise and the expansion of religions and the ways in which they influenced the life of people, and how their material life changed over time. This course is open to all students in NTU who are interested in learning about the early phase of Asian civilization.

**AAH201 Modern Southeast Asia**

AUs: 3, Prerequisites: NIL, Semester 1

This course deals mainly with the tumultuous period from the mid-nineteenth century to the 1970s, when Southeast Asia went from independence to colonial subjugation, through the nightmare of the Pacific War, towards independence. It deals with the international forces brought to bear on Southeast Asia, and local responses to those forces, as lives were transformed, and modern nationalism and nation-states were born. This course is suitable for NTU students who want an overview of main points in the historical formation and shaping of Southeast Asia up to 1975.

**AAH231 Early Modern Asia**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course explores main themes in political, socio-economic and cultural developments across Asia from 1400 to the 1820s. The rise and fall of states and development of political institutions in India, Southeast Asia and China are discussed in the context of economic changes that affected both the rulers and the ruled as Asia came into close contact with Europe, ushering in the age of globalization. The course concludes with a brief analysis of the ways in which indigenous states tried to modernize themselves and the extent to which they were successful. This course is open to all students in NTU who are interested in learning about the beginnings of modern socio-economic and political developments of Asia before the rise of colonial state.

**AAH232 Rise of Modern India**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course provides a broad survey of political, economic and socio-cultural aspects of India's development as a modern nation. The course begins with a brief introduction to the social and cultural milieu of India. Its economic and social transformation under colonial rule and the struggle against colonial rule leading to the foundation of a nation-state are discussed at some length. India's efforts to forge national unity against regional, ethnic and religious diversity and to achieve economic growth and modernization after independence are examined in the context of regional and global political and economic affairs.

**AAH234 Modern East Asia**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course deals with the broad current of historical changes in China and Japan in the 19th and 20th centuries. Discussions on China include such topics as the decay of the imperial order, the Nationalist revolution, the rise of Communism, the founding of the People's Republic, the Cultural Revolution, and Deng Xiaoping's reforms in the 1970's and the 1980s. In the case of Japan, emphasis will be put on Japan's transformation from an isolated, "feudalistic" society to a modern democracy and a leading industrialized nation today. In analysing Japan's economic, social and political changes, comparisons and contrasts with China will also be frequently made. This course is also offered to students of NTU with an interest in the modern history of China and Japan.

**AAH235 Modern Europe**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course deals with Europe from the French Revolution to present-day, with an emphasis on the later period. Europe is here defined to include Russia at one extreme, and the United Kingdom at the other. Each semester there will be a different set of themes and countries covered, so as to introduce student teachers to aspects of European politics and society, and European interactions with each other and the world. Typically, these might include issues as varied as Nazism, democracy, and the growth of European unity. This course is suitable for NTU students who want a general introduction to European History. They are advised to check the Humanities and Social Studies webpages for each semester's particular themes.

**AAH236 Australia and Asia**

AUs: 3, Prerequisites: NIL, Semester 1/2

Examines how Australia came to occupy the unique position of being a predominantly European culture in an Asian region. A focus is on one of the consequences of that position - the infamous "White Australia" policy which existed until the 1970s. It also examines Australian-Asian relations concentrating on Australian interventions into the Asian region, such as Australia helping the birth of the new nation of East Timor in 1999. The course deals with Australia's images of its Asian neighbours and these countries' views of Australia. It covers transformations in foreign policy, cultural and economic relations between Australia and Asia. This course is offered to all NTU students.

**AAH237 United States: The Emergence of a Superpower**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course presents a political, social, cultural and economic history of the United States in the 20<sup>th</sup> Century and up to the present. It starts with the Progressive period and continues to the current administration. The first half of the century will be examined in such areas as the legacies of the Great War, the boom of the 1920s and the Great Depression. This will be followed by an analysis of the Second World War, the Cold War and the current 'War on Terror'. Essentially, this course will explore the motivations, impulses and manifestations of a growing superpower becoming fully engaged in global affairs and the impact on the rest of the world. This focus on global engagement will be framed together with domestic political and social changes marked by such events as the turbulent 60s, the Civil Rights movement, Watergate and the so-called 'Culture War' between liberals and conservatives. This course is also offered to all NTU students.

**AAH331 International History: From World War One to the Present**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course examines the major developments in international history beginning with the First World War with a view to understanding the dynamics of underlying political, economic and social forces which have shaped the world in the course of the twentieth century. We shall discuss the ways in which hopes of progress and stability were kindled and shattered as the world came to be divided into power blocks. The course concludes with a discussion on the beginning of a new era in international politics starting with the collapse of bipolarity and the emergence of one superpower towards the end of the twentieth century. This course is also offered to all NTU students interested in international history.

**AAH332 Themes in Southeast Asian History**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course provides an opportunity to study in depth chosen facets of political, strategic, socio-economic and cultural developments in Southeast Asia from the mid-19<sup>th</sup> century onwards. The forces that have shaped society are examined through a multi-disciplinary focus so as to stimulate critical understanding of the ways in which modern Southeast Asia has emerged and what challenges it faces in the 21<sup>st</sup> century as a result of its historical legacy. This course is ideal for the student teachers who like to exercise a degree of freedom to explore in depth various aspects of political and socio-economic changes in modern Southeast Asia. The students in NTU pursuing business management, communication and disciplines other than history may also find that this course provides them with a new set of tools to broaden their understanding of the region.

**AAH333 China and Japan: A Comparative History**

AUs: 3, Prerequisites: NIL, Semester 1/2

Adopting a comparative approach to the study of pre-modern history of China and Japan, this course focuses on the similarities and differences in terms of political, economic and cultural developments in the two countries. The course will treat such topics as bilateral relations, political institutions, mode of economic development, religion as well as culture. This course is also offered to NTU students who are interested in East Asian history.

**AAH334 Heritage and Culture**

AUs: 3, Prerequisites: NIL, Semester 1/2

Student teachers are engaged in making practical assessments of historic landscapes and examining the heritage value of historical sites and landmarks. They do a major case study of a place that they consider to be of heritage value. The significance and meaning of what constitutes heritage is covered. Student teachers consider why some historical sites and monuments and not others are regarded as essential for school field trips and tourism. The question of how the public perceives the past as it is presented in the media, textbooks, museums and in historic buildings is also analysed. This course is offered to all NTU students.

**AAH336 A Glimpse of the Past: Reading Sources**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course provides a critical understanding of the ways in which historians read and interpret primary sources and reconstruct historical reality. Drawing examples from a wide range of primary sources such as chronicles, inscriptions, state papers, private papers including diaries and letters and newspapers from both Asia and Europe, the course will explore how the historians penetrate into the minds and milieu of people represented in the sources and opens a window to the world we have lost through a multi-disciplinary focus. This course is open to all students in NTU who are curious about learning how our ancestors lived and how their minds worked. Students who are keen to undertake historical research will find this course very useful as it provides a sound training in using sources.

**AAH431 Peace and War in Twentieth-century Asia**

AUs: 3, Prerequisites: NIL, Semester 1

This course focuses on the history of relations between Asian countries, and the broad ideological, economic, and cultural forces that have influenced the evolution of international politics in the twentieth century. Topics covered by this course will include the rise of newly independent states in Asia, the cause and consequences of the three major global conflicts in Asia: the First World War, the Second World War and the Cold War, the major regional conflicts: the Korean war, the Vietnam war, and the armed conflicts between China and the Soviet Union. This course is also offered to students of NTU with an interest in world history, particularly in international politics of modern Asia.

**AAH432 Asian Strategic Thought**

AUs: 3, Prerequisites: NIL, Semester 1

This course re-visits the strategic writings of selected Asian thinkers, such as Sunzi, Sunbin, Wuzi, Weiliaozi, Takuan Soho, Miyamoto Musashi, Yukio Mishima, Kautilya, the Bhagavad-Gita, Mao Zedong, Vo Nguyen Giap, Lee Kuan Yew, Kenichi Ohmae. We will seek to explore the following questions in the course: How the writings reflect the spirit of the particular period and its problems; and to what extent they are still relevant. This course is offered to all NTU students with an interest in the evolution of Asian Strategic Thinking.

**AAH433 The Roots of Technological Creativity: The Case of Japan and Singapore**

AUs: 3, Prerequisites: NIL, Semester 1

Why are some nations innovative and others not? This course examines the impact of history on the development of technological creativity through the case study of Japan and Singapore. Rising from the ashes of the atomic war, Japan's phenomenal economic transformation since the 1950s to a world economic power has been well documented. In this course we look specifically into the scientific and technological dimension of its transformation. As one of its former imperial colonies during the war period, Singapore was often cited as a success story of the "flying-geese" model – learning, adopting and adapting the ways of Japan's success. What was the historical role of science and technology in Singapore's development?

**AAH434 The History of Racial Thought**

AUs: 3, Prerequisites: NIL, Semester 1

An examination of the history of racial thought in Western societies. The course starts with classical and Biblical views of human types. There is a focus on racial ideologies rationalising European settlement of the New World, America, Australia, and the Pacific. Racial justifications for slavery and colonialism are covered. Then the course deals with the impact of the enlightenment and the rise of scientific racism, Social Darwinism, passing onto anti-Semitism and Nazi racial ideology. It ends with a study of contemporary racism in western societies. This course is offered to all NTU students.

**AAH435 Tradition and Revolt in Southeast Asia**

AUs: 3, Prerequisites: NIL, Semester 1

This course examines the dynamics of popular uprisings, protest movements and peasant wars in Southeast Asia from the 1870s to the end of the twentieth century. We shall begin our discourse with a brief survey of how popular movements of social and political agitation emerged under colonial rule, reached a climax just before the organized modern political movements came into existence in the early 1900s and changed its character as new nation-states emerged in the second half of the twentieth century. We shall try to understand how the painful process of modernization through which people adjusted themselves to numerous forces of socio-economic and political changes in Southeast Asia from the 1870s is reflected in rural protest movements.

**AAH436 Political Ideas from Aristotle to Osama bin Laden**

AUs: 3, Prerequisites: NIL, Semester 1

What was, or is Conservatism, Liberalism, Marxism, 'Political Islam', or for that matter Environmentalism? History involves more than a series of dry chronological events, it also involves ideas, ideologies, and utopian visions which people have been willing to suffer for, die for, and even kill for. This course introduces a selection of concepts, ideas and ideologies, and especially key thinkers, from ancient times to modern. As such, it will give student teachers not just a better understanding of the past, but also tools for analysing the present. This course is suitable for NTU students who would like a historians' perspective' on political and social thinkers and on the ideas that have shaped action, and history, and which in many cases are still important in shaping our world today. It is particularly suitable for student teachers who enjoy thinking conceptually.

**AAH437 Diplomacy in Pre-modern Asia: China and its Neighbours**

AUs: 3, Prerequisites: NIL, Semester 1

This course examines the international system in pre-modern Asia. It starts with a critical assessment of the 'tributary system', and then introduces students to the relations between China and its major Asian neighbours: the three Korean states (Koguryo, Silla and Paekche), Parhae in Manchuria, the Turkic empire on the steppe, the Tibetan Kingdom of Tubo, and the Nanzhao Kingdom of Yunnan. Through such case studies as diplomatic protocol, diplomatic correspondence, and overland as well as maritime trade, this course provides an in-depth analysis of the nature of diplomacy in pre-modern Asia.

**AAH438 Women's History in Asia**

AUs: 3, Prerequisites: NIL, Semester 1

This course will examine the history of women in Asia through interpretations and critiques of gender theories that has been articulated in the 20<sup>th</sup> century. It seeks to examine the definitions of feminism and the manifestation of female activism from various geographic and cultural locales within Asia, addressing specific issues such as women's place in the family and society; nationalism and political rights; and war and its legacies. Through an examination of these issues, a comparative approach can be taken with regards to the historical and transnational contexts which shaped the articulation of gender in Asia. Countries to be examined in this course may include China, Japan, Korea, Singapore and other Asian countries.

**AAD101 Introduction to Malay Linguistics**

AUs: 3, Prerequisites: NIL, Semester 1

An introduction to the scientific study of human languages. The study of sounds and their patterns in Malay (phonetics and phonology). Word formation and Malay affixes (morphology). Word classes and sentential constituents (syntax), and meanings (semantics and pragmatics).

**AAD102 Jawi and Malay Literacy**

AUs: 3, Prerequisites: NIL, Semester 1

This course highlights the special place of Jawi and Islamic writings in Malay literacy. It traces the origin of the Arabic script, the Persian influences and adaptations into Malay classical script. The old and modern development of Jawi writings and manuscript will be examined. Practice in reading and writing of Jawi materials, old and new will be provided

**AAD103 Phonetics and Phonology in Malay**

AUs: 3, Prerequisites: NIL, Semester 2

This course consists of training in the discrimination and production of Malay sounds (vowels, consonants, diphthongs, and intonation). As a means of recording phonetics material, student teachers will be trained in the use of international Phonetic Alphabet (IPA). It also includes practical reading from phonetic texts of Malay for the purpose of improving diction and pronunciation. The second part of the course will deal with the sound systems of Malay in structural and generative terms. The segmental and supra-segmental sounds of language will be covered. Emphasis will be placed on the practical application of phonological description to the teaching of Malay language.

**AAD201 Education of the Malays**



AUs: 3, Prerequisites: NIL, Semester 1

This course looks at traditional education and the historical development of education among the Malays of South East Asia. It covers education during the Srivijaya period, the process of Islamization, through the beginnings of modernization during the colonial period up to the development of education in the independent states of Indonesia, Malaysia and Brunei. The role of language and culture in influencing education systems will be examined.

### **AAD202 Malay Morphology and Syntax**

AUs: 3, Prerequisites: AAD103, Semester 1

Analysis of the morphological structure of the Malay language: word structure, word formation, affixes and reduplication, morphological processes, and interface between morphology and syntax. Study of the syntax of Malay: structure of sentences, structural relations among phrases, and formal and functional grammars. Linguistic problem-solving skills, and the foundations for syntactic analysis and grammatical description.

### **AAD203 Introduction to Sociolinguistics**

AUs: 3, Prerequisites: NIL, Semester 2

Concepts in Sociolinguistics studies. Language Varieties and patterns of language use in multilingual communities. Explorations of roles and functions of languages in multilingual communities; problems of linguistic minorities; factors influencing language maintenance and language shift. Cross-cultural differences in language behaviour. Social factors in the variation in language. Modern Malay in relation to social factors: social class, education level, type of education, age, sex, ethnic origin etc.

### **AAD204 Origin and Development of Malay Language**

AUs: 3, Prerequisites: NIL, Semester 2

An overview of the historical development of Malay from its origin to the modern period. Malay language in the family of Austronesian languages. Old Malay inscriptions; the Sanskrit, Arabic and Persian elements and influences in Malay language. Characteristics of Malay language in pre and post war era. Development of Malay as a modern language.

### **AAD301 Semantics and Pragmatics in Malay**

AUs: 3, Prerequisites: NIL, Semester 1

Introduction to a scientific description of linguistic meaning in Malay: semantic properties and relations, entailment, ambiguity, theories of word and sentence meaning, and logical form. Topics in pragmatics such as presupposition, conversational implicature, speech acts, language-culture relationships. The meaning of metaphors. The types of evidence and arguments vis-à-vis key concepts and claims in semantics and pragmatics.

### **AAD302 Islam and Malay Society**

AUs: 3, Prerequisites: NIL, Semester 1

A historical and sociological understanding of the role of Islam in Malay society will be the focus of this course. Amongst the themes that will be explored are: the Islamization of the Malays in the past and contemporary period, the conditioning of the Malay value system, religious institutions in Malay society and the influence of Islam on Malay ideas in education, aesthetics, community life and economic ethos. Also the phenomenon of the *dakwah* movement since the 1970s will be discussed. Overall the significance and contribution of Islam in the cultural life of the Malays will be examined.

### **AAD331 Standardization and Issues in Malay Language**

AUs: 3, Prerequisites: NIL, Semester 1/2

The socio-political history in the standardization of the Malay language. Important events in the development of vocabulary, grammar and genres within the Malay and Indonesian languages. Investigation of issues such as the status of Malay, *Sebutan baku*, Malay as medium of instruction, identity and maintenance and shift in use of Malay with special emphasis on the role of Malay in Singapore.

### **AAD332 Malay Arts and Civilization**

AUs: 3, Prerequisites: NIL, Semester 1/2

An overview of the historical and cultural development of arts and civilization of the Malays. This will include the location of cultural hearths, the extent of cultural regions and the spatial diffusion of cultural groups. Multiple manifestations of Malay arts and civilization such as Jawi scripts, traditional Malay architecture, music and dance, performance and fine arts, crafts, language, literature, economics, government, etc. will be examined as well as processes of cultural acculturation and assimilation.

**AAD333 The Cultural Life and Practices of the Malays**

AUs: 3, Prerequisites: NIL, Semester 1/2

Introduction to an analysis of the various components of Malay beliefs, customs and practices. The important festivals and their values, places of worships, customs and traditions. Interaction of the Malays with the various components of cross-cultural practices existing in our multi-racial culture.

**AAD431 Readings in Malay Language Education**

AUs: 3, Prerequisites: NIL, Semester 1

Readings and discussions of selected areas in language literacy and education. Some of the topics covered will include the social construction of the language curriculum, teaching mother tongues, bilingual and multilingual education, the inculcation of values through language education, language and culture, language and ethnicity, language and cognition as well as language and literacy issues vis-à-vis national, economic and cultural development.

**AAD432 Approaches in Malay Language Studies**

AUs: 3, Prerequisites: NIL, Semester 1

Exploration of research in the Malay language, including principles and procedures in language research, approaches to research design, data collection and analysis and the methodologies of writing a report.

**AAF101 Traditional Malay Literature 1**

AUs: 3, Prerequisites: NIL, Semester 1

An overview of the development of traditional Malay literature. The concepts, genres, classification and functions of literature in the traditional Malay society. The religious, cultural and historical factors influenced the content, production, distribution and contribution of the literature. Special focus on the oral/folk literature (*Sastera Rakyat*) and major works produced during the Hindu period such as *Hikayat Seri Rama* and *Sastera Panji*.

**AAF102 Traditional Malay Literature 2**

AUs: 3, Prerequisites: NIL, Semester 2

Further discussion on the development of traditional Malay literature. The influence of Islam on the development of Malay literature, especially on written works or classical manuscripts. *Sastera Sejarah* (Malay historiography) such as *Sejarah Melayu*, *Sastera Hikayat*, *Sastera Epik* (epics), *Sastera Kitab*, *Sastera Undang-Undang* (adat laws), *Sastera Ketatanegaraan*, classical poetry such as *syair*, *nazam* and *gurindam* etc.

**AAF103 Modern Malay/Indonesian Literature 1**

AUs: 3, Prerequisites: NIL, Semester 2

Introduction to the socio-historical development of modern Malay literature, beginning from Munsyi Abdullah in the 19<sup>th</sup> century to the early decades of the twentieth century. The significance of literary movements and orientations will be examined such as in the institutions of Pejabat Karang Mengarang, Balai Pustaka, the literary movement of Pujangga Baru and Angkatan 45 in pre-War Indonesia and Malaya. The vision and idea of literature amongst the various literary circles, major authors and the growth of literary genres will be examined in the context of pre-war nationalism and cultural revivalism.

**AAF201 Critical Theory**

AUs: 3, Prerequisites: NIL, Semester 1

Focuses on modern and post-modern literature theories to enable the student teacher to master the subject and enable them to carry out practical criticism on literary texts. The effects and influences of the theories towards the development of creative writing and Malay literature will also be discussed. This proposed course will prepare student teachers to be knowledgeable and competent literature teachers.

**AAF202 Modern Malay/Indonesian Literature 2**

AUs: 3, Prerequisites: NIL, Semester 1

This course is a detailed thematic survey of Malay/Indonesian literature in the postwar period. Special attention will be given to examining the works of major authors like Masuri S.N., Keris Mas, Usman Awang, A Samad Said, Shahnnon Ahmad in Singapore-Malaysian literary scene, while focusing on Pramoedya Ananta Toer, Achdiat Mihadja, Mochtar Lubis, WS Rendra, Sutarjdi Calzoum, etc. in the Indonesian case. Various issues in the development of contemporary literary culture will be evaluated such as the issues on nation building and literature, the functions of literature and the religious orientations in literature as encapsulated in the discourse of *sastera Islam*.

**AAF231 Reading of Literary Canon**

AUs: 3, Prerequisites: NIL, Semester 1/2

A study on canon literature by analyzing texts which had already reached the highest and supreme ranking in order to

explore their characteristics in terms of textual and contextual aspects. The main objective is to appreciate those evergreen texts so that their characteristics will be followed upon and to simultaneously enhance the development of creative writing and literature critics. Among the texts for study will include *Sejarah Melayu*, *Hikayat Hang Tuah*, *Syair Hamzah Fansuri*, *Hikayat Abdullah*, *Poetry by Chairil Anwar* and *Usman Awang*, and selected novels such as *Ranjaru Sepanjang Jalan*, *Kering*, *Sukma Angin* etc.

**AAF232 Singapore Malay Literature**

AUs: 3, Prerequisites: NIL, Semester 1/2

The development of Malay literature in Singapore from the earliest time to date. The role of Singapore as the regional publication, cultural and literary centre in the 19<sup>th</sup> century, major stages of literary movements before and after the World Wars, and the emergence of new literature after Independence (1965) and its recent developments.

**AAF233 Children's and Adolescent's Literature**

AUs: 3, Prerequisites: NIL, Semester 1/2

The role and function of literature in children's and adolescents' psychological development. Discussion on various styles, techniques and thematic conventions in children's literature. Focus on the development of children and adolescent literature in Malay language. Examination of selected and popular stories and poetry for children and its application in school contexts.

**AAF234 Modern Malay Drama**

AUs: 3, Prerequisites: NIL, Semester 1/2

An in-depth account of the history of modern drama development starting with *sandiwara*, realism, absurdism until the latest trend. Emphasis will be given to text analysis, writing technique and stream. Staging aspects will also be discussed and will include topics such as text transformation, directing, acting and technical aspects such as setting, lighting, costumes, music, tempo and drama management.

**AAM101 Calculus I**

AUs: 3, Prerequisites: NIL, Semester 1

Functions: domain, codomain, range, composition of functions, graphs. Limits and continuity. Differentiation and applications of differentiation. Integration and applications of integration.

**AAM102 Algebra I**

AUs: 3, Prerequisites: NIL, Semester 1

Introduction to set theory. Linear systems and methods of solving linear systems. Matrix algebra, determinant function. Vectors in  $R^2$  and  $R^3$ , dot product, cross product and geometric applications. Euclidean n-space, linear transformations.

**AAM103 Finite Mathematics**

AUs: 3, Prerequisites: NIL, Semester 2

Basic principles of counting. Permutations and combinations. Generalized permutations and combinations. Binomial theorem and combinatorial identities. The Pigeonhole principle. Sample space and probability distributions. Conditional probability. Independent events.

**AAM104 Number Theory**

AUs: 3, Prerequisites: NIL, Semester 2

Divisibility. Greatest common divisor. The Euclidean algorithm. Prime numbers. The Fundamental Theorem of Arithmetic. Linear Diophantine equations. Congruences. The Chinese Remainder Theorem. The Euler's Phi function. The sum and number of divisors. Euler's Theorem. Quadratic residues. The Law of Quadratic Reciprocity. Primitive roots and indices. Real-life applications such as check digits, cryptography.

**AAM201 Calculus II**

AUs: 3, Prerequisites: NIL, Semester 1

Sequence and series. Power series. Partial derivatives for functions of two or more variables, differentiability and chain rules for functions of two variables, directional derivatives and gradients for functions of two variables, tangent planes and normal lines, maxima and minima of functions of two variables, generalization of the concepts to functions of more than two variables. Double integrals and triple integrals.

**AAM202 Algebra II**

AUs: 3, Prerequisites: AAM102, Semester 1

Introduction to propositional logic. Methods of proof. General vector spaces, bases and dimensions. Linear transformations between general vector spaces, matrices of linear transformations. Eigenvalues and eigenvectors, diagonalization. Orthogonality in  $n$ -space, diagonalization of quadratic forms, conic sections. Applications.

**AAM203 Statistics I**

AUs: 3, Prerequisites: NIL, Semester 2

Descriptive statistics. Random variables. Probability distributions and probability density functions. Cumulative distribution functions. Mathematical expectations. Sampling distributions and central limit theorem. Estimation and confidence intervals: one and two samples.

**AAM204 Computational Mathematics**

AUs: 3, Prerequisites: NIL, Semester 2

Introduction to computational methods and computing tools. Use of computing techniques to solve problems in mathematics, science and other disciplines. Examples may be drawn from problems involving numerical solutions of equations in one variable, approximation of functions, solving systems of linear equations, and numerical simulations.

**AAM331 Differential Equations**

AUs: 3, Prerequisites: NIL, Semester 1/2

Separable, linear and exact first order ordinary differential equations (ODEs). Existence and uniqueness of solutions. Modelling with first order ODEs. Second order ODEs: fundamental solutions, Wronskian, linear dependence. Applications and approaches in modelling, solving and interpreting physical problems with second order ODEs. Laplace transform method for initial value problems.

**AAM332 Statistics II**

AUs: 3, Prerequisites: NIL, Semester 1/2

Hypothesis testing: large and small samples. Tests concerning variances. Bivariate distributions: marginal and conditional distributions, covariance, independence. Simple linear regression.

**AAM341 Real Analysis**

AUs: 3, Prerequisites: NIL, Semester 1/2

The Completeness Axiom. The Archimedean Property. Density of rational and irrationals. The limit of a sequence, limit theorems. The limit of a function, the continuity of a function. The Intermediate Value Theorem. The Bolzano-Weierstrass Theorem. Extreme Value Theorem. Differentiation. Mean Value Theorem. Riemann Integration. The Fundamental Theorem of Calculus.

**AAM342 Modern Algebra**

AUs: 3, Prerequisites: NIL, Semester 1/2

Permutations and permutation groups. Groups, Lagrange's Theorem. Symmetry groups of plane figures. Quotient groups, Cauchy's theorem. Group homomorphisms and the Fundamental homomorphism theorems. Rings and fields, ring homomorphism. Ideals, quotient rings. Rings of polynomials.

**AAM333 Modelling with Differential Equations**

AUs: 3, Prerequisites: AAM331, Semester 1/2

The solution of ordinary differential equations (ODEs), including system of ODEs. Phase-plane, trajectories and fixed points. Stability and classification of fixed points. Sketching solutions in the phase-plane. Examples will include mass/spring systems, pendulum motions and predator/prey models. Numerical solution of ordinary differential equations: initial value problems, Euler's method. Runge-Kutta method. Applications of numerical techniques.

**AAM334 Statistics III**

AUs: 3, Prerequisites: AAM332, Semester 1/2

Analysis of variance: completely randomised design, randomised block design, factorial designs. Chi-square tests and contingency tables. Non-parametric tests.

**AAM343 Combinatorial Analysis**

AUs: 3, Prerequisites: NIL, Semester 1/2

Combinatorial techniques in proving. The principle of Inclusion and Exclusion and the general principle of Inclusion and Exclusion. The generating function of a sequence of numbers.

**AAM344 Complex Analysis**

AUs: 3, Prerequisites: NIL, Semester 1/2

Complex numbers, complex functions. Complex differentiation, analytic functions, the Cauchy-Riemann equations. Complex integration over paths, Cauchy integral theorem, Cauchy integral formula. Fundamental theorem of algebra. Taylor series. Residues and poles. Laurent series, the residue theorem, evaluation of real definite integrals.

**AAM431 Advanced Mathematical Modelling**

AUs: 3, Prerequisites: AAM331, Semester 1/2

Introduction to partial differential equations (PDEs) and classification into elliptic, parabolic and hyperbolic PDEs. Analytical and numerical solutions of PDEs. Explicit and implicit finite difference techniques for time-dependent PDEs, such as the unsteady diffusion equation. Direct and iterative methods for solving systems of algebraic equations. Application of numerical techniques for solving PDEs to industrial problems.

**AAM432 Statistical Theory**

AUs: 3, Prerequisites: AAM332, Semester 1/2

Distribution theory, moment generating functions, central limit theorem. Sampling distributions: t-, F-, and chi-square distributions. Estimation theory and hypothesis testing theory.

**AAM433 Applied Statistics**

AUs: 3, Prerequisites: AAM332, Semester 1/2

Selected topics from multiple regression models, design of experiments.

**AAM434 Techniques in Operations Research**

AUs: 3, Prerequisites: NIL, Semester 1/2

Topics from the theory of networks: minimal spanning trees, shortest paths, maximal flows, critical path analysis. Topics from the advanced theory of networks: least cost flows, transportation problem, travelling salesman problem, dynamic programming.

**AAM435 Mathematical Programming and Stochastic Processes**

AUs: 3, Prerequisites: NIL, Semester 1/2

Selected topics from the theory of linear programming: the simplex algorithm, introduction to duality, sensitivity analysis, dual simplex algorithm, integer programming, non-linear programming. Selected topics from the theory of stochastic processes: queueing theory, probabilistic inventory models, project scheduling under uncertainty.

**AAM436 Metric Spaces**

AUs: 3, Prerequisites: AAM341, Semester 1/2

Topology in  $\mathbb{R}$ . Metric spaces. Open sets and closed sets. Convergence and completeness. Continuity and compactness. Equicontinuity, Arzela-Ascoli Theorem. Topological spaces.

**AAM437 Galois Theory**

AUs: 3, Prerequisites: AAM342, Semester 1/2

Field extensions, simple, finite and algebraic extensions, constructions with straight-edge and compass, splitting fields, normal and separable extensions, primitive elements, finite fields, Galois groups, Galois extensions, The Fundamental Theorem of Galois Theory, solvability by radicals.

**AAM438 Graph Theory**

AUs: 3, Prerequisites: NIL, Semester 1/2

Graphs. Euler tours, Hamiltonian cycles, representations of graphs, isomorphisms of graphs, planar graphs. Trees and applications.

*Selected topics from:*

Connectivity and matching: Hall's theorem, transversals, Konig's theorem, vertex and edge cuts, Menger's theorem.

Colouring: vertex colouring, Brook's theorem, chromatic polynomials, map colouring and the four colour problem, edge colouring, Vizing's theorem.

Planarity: planar graphs, Kuratowski's theorem, Euler's formula, dual graphs.

Ramsey theory, extremal graphs.

**AAM439 Geometry**

AUs: 3, Prerequisites: NIL, Semester 1/2

The axiomatic approaches to various geometries, including finite geometries, Euclidean geometry, hyperbolic geometry and spherical geometry. Geometric transformations of the Euclidean plane, symmetries and isometries. Brief excursions to the classical projective geometry and the modern geometry of fractal.

**AAI101 Musical Practices I (including Instrumental Studies)**

AUs: 3, Prerequisites: NIL, Semester 1

This course, as the first of a series of similarly constructed courses, seeks to introduce musical practices by situating them in a social and historical context. Musical practices, via creating performing and responding, form the basis of learning about any specific musical practice and the activity of experiencing and reflecting on the musical practice. Each musical practice would have to be viewed from its own culturally situated and practice specific context. This course acknowledges a constructivist paradigm in the teaching and learning of and about music asserting knowledge as being uniquely constructed by individuals. Learning is facilitated in an environment, which is created and/or constructed by both student teachers and facilitators as stakeholders. This course also requires student teachers to take up instrumental studies in the form of their main instrument and prescribed ensembles.

**AAI102 Foundations in Musical Studies I (including Ensemble Studies)**

AUs: 3, Prerequisites: NIL, Semester 1

This course introduces analysis as a mode of systematic inquiry which will serve, via listening, as a foundation for understanding a wide variety of musics. It introduces theoretical and analytical approaches to formal knowledge, either as verbal/oral or written, about musics through musical experiences of performing and listening. In this course, analyses of musics describe and distinguishing musical exemplars by employing a coherent and comprehensible terminology through contemplation of fundamental compositional materials in the activity of concentrated listening. This course also requires prescribed ensemble participation.

**AAI103 Musical Practices II (including Instrumental Studies)**

AUs: 3, Prerequisites: NIL, Semester 2

This course, the second in the series, continues to introduce musical practices by situating them in a social and historical context. Musical practices, via creating performing and responding, form the basis of learning about any specific musical practice and the activity of experiencing and reflecting on the musical practice. Each musical practice is viewed from its own culturally situated and practice specific context. This course acknowledges a constructivist paradigm in the teaching and learning of and about music asserting knowledge as being uniquely constructed by individuals. Learning is facilitated in an environment, which is created and/or constructed by both student teachers and facilitators as stakeholders. This course also requires student teachers to take up instrumental studies in the form of their main instrument and prescribed ensembles.

**AAI104 Foundations in Musical Studies II (including Ensemble Studies)**

AUs: 3, Prerequisites: NIL, Semester 2

This course builds on the processes of musical theory and practice as a mode of systematic inquiry and serves, via listening, to contemplate the musical examples by analysing relationships beyond it; composer, compositional realisation, compositional systems; compositional antecedents and precedents, perceptual properties, issues and challenges in apprehension, musical anthropology, among a variety of concerns. In engendering a mode of systematic enquiry, this course seeks to affirm the role of analysis as a way to enhance enjoyment, appreciation and understanding of musical works, procedures and practices. This course also requires prescribed instrumental/vocal ensemble participation.

**AAI201 Musical Practices III (including Instrumental Studies)**

AUs: 3, Prerequisites: NIL, Semester 1

This course, the third in the series, represents a further development in learning musical practices, via creating performing and responding, from a culturally situated and practice specific context. This course introduces concepts about construction of greater/lesser in musical traditions and ramifications of such a construction. Learning is facilitated in an environment, which is created and/or constructed by both student teachers and facilitators as stakeholders. This course also requires student teachers to take up instrumental studies in the form of their main instrument and prescribed ensembles.

**AAI202 Orchestration and Arranging (including Ensemble Studies)**

AUs: 3, Prerequisites: NIL, Semester 1

This course involves a study of varied repertoire ranging from orchestral music, rock, pop, techno to big band, and explores the capabilities of the various instruments, with a view to developing skills in applying and sequencing instrumental combinations effectively in creating an effective piece of music.

**AAI203 Musical Practices IV (including Instrumental Studies)**

AUs: 3, Prerequisites: NIL, Semester 2

This fourth and final course in the series of musical practices, prepares student teachers for a more advanced approach to learning musical practices from a culturally situated and practice specific context, while still engaging them via creating, performing and responding. This course critically examines the ramifications of constructing labels

in musical traditions such as greater/lesser, written/oral (aural), mainstream/marginal, specifically music of popular culture and jazz. This course introduces concepts in cultural theory, ethnomusicology and anthropology through musical learning which is facilitated in an environment, which is created and/or constructed by both student teachers and facilitators as stakeholders. This course also requires student teachers to take up instrumental studies in the form of their main instrument and prescribed ensembles.

**AAI204 Foundations in Music Education (including Ensemble Studies)**

AUs: 3, Prerequisites: NIL, Semester 2

This course introduces a study of historical, psychological and philosophical foundations of music education including established music educators and their contributions. This introduction to fundamental philosophies, principles and educational practices in the field of music education forms a knowledge base for developing ways of thinking and knowing of and about music education for the music classroom. This course also requires student teachers to take up instrumental studies in the form of their main instrument as well as prescribed ensembles.

**AAI301 Studies in Music Education (including Ensemble Studies)**

AUs: 3, Prerequisites: NIL, Semester 2

This course seeks to develop the foundations of music education by introducing aspects of programme development, teaching methods, administration, supervision and evaluation alongside comparative studies of major music educators with music curriculum design. This course also requires prescribed instrumental/vocal ensemble participation.

**AAI330 Music and Technology (including Ensemble Studies)**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course introduces ways in which technology supports musical practice in the areas of creating, performing and responding. The terms and tools of technology are critically examined in their nature, role and function in musical practice. This course requires student teachers to take up instrumental studies in the form of their main instrument and prescribed ensembles.

**AAI331 Ethnomusicology (including Ensemble Studies)**

AUs: 3, Prerequisites: NIL, Semester 1/2

A study of the theory and methods of ethnomusicology. This study will also emphasise the importance of techniques and technology in ethnomusicological fieldwork studies and methodology as well as a study of musical transcriptions from various cultures and their significance for ethnomusicological study. There will also be a study of the traditional music from a wide range of cultures. This course requires student teachers to take up instrumental studies in the form of their main instrument and prescribed ensembles.

**AAI332 Musical Behaviours (including Instrumental Studies)**

AUs: 3, Prerequisites: NIL, Semester 1/2

A study of musical practices around the world with special emphasis on interdisciplinary perspectives such as philosophy, music education, analysis, sociology and the teaching and learning of the various musical traditions. This course also requires student teachers to take up instrumental studies in the form of prescribed ensembles.

**AAI333 Analysis of Twentieth-Century Music (including Ensemble Studies)**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course involves a more in-depth study of twentieth-century music (including local composers' works) and their attendant musical aesthetics and techniques like serial analysis, set-theory based approaches to art music as well as approaches to understanding jazz, music of popular culture, including pop, rock and rap. This course also requires prescribed instrumental/vocal ensemble participation.

**AAI334 Conducting (including Ensemble Studies)**

AUs: 3, Prerequisites: NIL, Semester 1/2

This course seeks to introduce fundamental principles and practices of conducting ensembles like band or choir with emphasis on consolidation of techniques and practical skills. These skills involve the study of rehearsal procedures and performance practice; seen as a knowledge base for developing other skills in performing and ensemble directing. This course also requires prescribed instrumental/ vocal ensemble participation.

**AAI335 Composing (including Ensemble Studies)**

AUs: 3, Prerequisites: NIL, Semester 1/2

Further exploration of compositional procedures study of composition, in which the student teacher produces either an extended work or a portfolio of compositions. A portfolio of examples via practical-based composition is also taken

into account and includes musics of popular cultures from around the world. This course also requires prescribed instrumental/vocal ensemble participation.

**AAI430 Performance Studies Project (including Ensemble Studies)**

AUs: 3, Prerequisites: NIL, Semester 1

This course offers the opportunities for student teachers to pursue in-depth performance/ instrumental studies in the form of their main instrument or ensemble related performances, like conducting an ensemble.

**AAI431 Music Education Project (including Ensemble Studies)**

AUs: 3, Prerequisites: NIL, Semester 1

This course requires the student teacher to carry out research projects by tapping into knowledge and skills introduced and developed in previous courses in the areas of historical, psychological and philosophical foundations of music education, programme development, methods of teaching, administration, supervision and evaluation and the comparative study of the philosophies of major music educators, along with music curriculum design. This course also requires prescribed instrumental/vocal ensemble participation.

**AAI432 Ethnomusicology Project (including Ensemble Studies)**

AUs: 3, Prerequisites: NIL, Semester 1

The project involves the application of approaches and methods of ethnomusicology to a chosen musical culture as well as a study of the theory and methods of ethnomusicology, with emphasis on techniques in ethnomusicological field work methods and the study of musical transcriptions from various cultures. There will also be a study of traditional musics from a wide range of cultures. This course also requires prescribed instrumental/vocal ensemble participation.

**AAI433 Musicological Research Project (including Ensemble Studies)**

AUs: 3, Prerequisites: NIL, Semester 1

An exploration of some aspects of the history of music in some depth, based on contemporary historical theories. Student teachers will have the opportunity to explore chosen topics. The project explores problems and issues surrounding the study of musical compositions and involves the use of analytical techniques applied to them. This course also requires prescribed instrumental/vocal ensemble participation.

**AAI434 Composition Project (including Ensemble Studies)**

AUs: 3, Prerequisites: NIL, Semester 1

This course is an advanced study of composition, in which the student teacher must produce either an extended work or a portfolio of compositions which can include practical-based composition like musics of popular cultures from around the world. Student teachers here are now expected to have their compositions performed by ensembles and performances recorded. This course is used for developing other skills like composing using music technology. This course also requires prescribed instrumental/vocal ensemble participation.

**APA102 Growth and Motor Development**

AUs: 2, Prerequisites: NIL, Semester 1

This course is designed to understand the relation between physical growth and motor development in children and adolescent. Various topics including stages, age related changes, individual differences, and gender differences in relation to growth and motor development will be covered during the course. In addition, interventional strategies to facilitate growth and motor development will be discussed. Implications for the teaching of physical education will be emphasized throughout the course.

**APA103 Anatomical and Biomechanical Foundations of Physical Activity**

AUs: 3, Prerequisites: NIL, Semester 2

Structural anatomy deals with the knowledge and an understanding of the skeleton, joints and muscle structure that produces movement. Biomechanics is the study of a biological system by means of mechanics. This course introduces the basic mechanical and anatomical concepts and principles that govern human movement. The aim of this course is to enable student teachers to perform qualitative analyses of human movement using basic concepts of mechanics and anatomy in the context of PE and sports.

**APA104 Physiology of Exercise**

AUs: 2, Prerequisites: NIL, Semester 2

The principal areas covered include energy metabolism for exercise, aerobic performance and anaerobic performance, sex and age-associated differences in exercise performances and thermoregulation in the heat. The associated teaching implications will be brought to the fore. In addition, aspects of functional anatomy dealing with the associated exercise parameters and the part each plays in physical performance, health and fitness will be discussed in this course.



**APA105 Introduction to Physical Education & Sport**

AUs: 2, Prerequisites: NIL, Semester 1

This course emphasises concepts related to the broad field of physical education and sport. It provides an overview of the disciplines that study the field's philosophical, historical, cultural, and sociological foundations and their applications to professional practice. The course examines the structure of the Singapore Sports Council, National Sport Associations, Singapore Schools Sports Council and the Co-Curricular Activities Branch and their relationships in promoting participation in sports from recreational to high performance levels. The daily work in physical education and sport, looking at the traditional field of teaching and coaching, is also highlighted. Current issues and future directions in the field are also explored.

**APA201 Foundations of Psychology & Motor Learning in Physical Activity**

AUs: 3, Prerequisites: APA102, Semester 1

This course examines the foundations of sport and exercise psychology and the concepts and principles associated with skill acquisition. Specifically, the course will focus on topics and issues related to the social psychological variables that influence participation in physical activity and sport, the sport and exercise environments within which participants operate, as well as selected outcomes of such participation.

**APA202 Measurement and Evaluation**

AUs: 3, Prerequisites: NIL, Semester 1

This course is designed to provide student teachers with basic concepts of measurement and evaluation in physical education. The course will focus on basic concepts of statistics and the use of computers for data analysis. In addition, techniques to analyse the effectiveness of physical education programme will be introduced and discussed. This course is designed to prepare future teachers to become knowledgeable in administering and evaluating tests within the discipline of physical education.

**APA231 Physiological Bases of Exercise**

AUs: 3, Prerequisites: APA104, Semester 2

This academic course on exercise physiology embraces important concepts in the physiology of exercise in the school-going age population (8-18 years), contrasting with those of adults. The principal areas covered include the trainability of aerobic & anaerobic performance in young people compared to adults, and nutritional aspects of performance including fluid supplementation.

**APA232 Quantitative Methods in Biomechanics**

AUs: 3, Prerequisites: APA103, Semester 2

This course introduces participants to quantitative methods for determining mechanical parameters of movement, namely linear and angular kinematic and kinetic quantities through laboratory work. Participants should have completed the mechanical and anatomical bases of human motion before enrolling for this course. A quantitative analysis of sports using basic biomechanical concepts will be introduced to explain movements required in various activities. The use of such quantitative procedures will allow the teacher or coach to effectively analyse movement, explain causes of observed effects and to remediate errors using a safe and scientific approach.

**APA233 Psychology of Physical Education & Sport**

AUs: 3, Prerequisites: APA201, Semester 2

This course is designed to provide student teachers with an understanding of how psychological variables influence participation in sport and physical education, focusing on the key motivational perspectives of exercise and sport.

**APA234 Neuromuscular Control of Human Movement**

AUs: 3, Prerequisites: APA201, Semester 2

The purpose of this course is to examine the concepts associated with motor control and the neuromuscular basis of human movement. Student teachers will look at the structures involved in motor control from anatomical, neurophysiological, and biomechanical perspectives, and then, their motion will be interpreted from motor control perspective. Student teachers are encouraged to actively participate in the class by making questions or raising problems.

**APA235 Sociology of Sport**

AUs: 3, Prerequisites: APA101, Semester 2

The course focuses on the role of sport in society. Sociological theories and methodologies are examined and applied to the study of sport. The course will examine issues such as globalization, race, and women in sport.

**APA236 Management of Sport Organisations**

AUs: 3, Prerequisites: APA101, Semester 2

This course introduces student teachers to the types of sport organizations and the important issues relating to the management of such organizations. The study of sport organizations will be based on organizational theory's concepts and principals. The important topics of the course include: type of sport organizations, legal identity of sport organizations, goals and objectives of sport organizations, leadership, conflict management and decision making in sport organizations, and strategic planning in sports. The course also introduces to the student the key managerial roles and functions important to managing sport and physical education. The physical education department will be used as a constant management unit to illustrate the key concepts covered.

**APA331 Applied Physiology of Exercise**

AUs: 3, Prerequisites: APA231, Semester 1

This course examines the sports training adaptations for aerobic endurance, short term power output, and strength in young people (ages 8-18 yrs), nutrition for sports & training (ergogenic aids), power recovery from intermittent exercise & effects of attitude training on swimming performance.

**APA332 Biomechanics in Sport**

AUs: 3, Prerequisites: APA232, Semester 1

Biomechanics is the study of a biological system by means of mechanics. This course will focus on the quantitative analysis of human movement in sports. Student teachers will learn how to design a quantitative analysis, collect, analyze and interpret data obtained from the equipment associated with the measurement technique. From the analysis work of this course, student teachers will be expected to examine the relationship between performance measure and human motor system. Student teachers will have the opportunity to explore the underlying processes that is involved in the production of this human movement in sports. The course will consist of theory and applied field work.

**APA333 Applied Psychology of Physical Education & Sport**

AUs: 3, Prerequisites: APA233, Semester 1

This is an applied sport psychology course targeted at student PE teachers who want to consider mental training as a useful tool for enhancing sport performance. The participants will be introduced to the role of applied sport psychologist, the development and evaluation of basic mental skill training, and theories underpinning each mental skill. This course will be both theoretically and practically based.

**APA334 Neural and Behavioural Perspectives of Human Movement**

AUs: 3, Prerequisites: APA234, Semester 1

The objective of this course is to describe, compare, and contrast current theoretical perspectives of motor learning and control. The range of topics covered in this course will be from the basic principles of human movements to complex human behavior, mainly from the behavioral perspectives. In addition, the basic concept of neural interpretation of human motor control will be addressed.

**APA335 Social History of Sport**

AUs: 3, Prerequisites: APA235, Semester 1

This course will examine the historical development of sport across cultures, tracing the significant milestones in the changing role of sport in society. Issues such as Olympism, from its elitist neo-classical origins to its present commercialized form, will be examined.

**APA336 Event and Facilities Management in Sport**

AUs: 3, Prerequisites: APA236, Semester 1

The course will focus on the important considerations required to successfully conduct a sport event. Design and maintenance considerations of a sport facility will also be studied to determine what is preferable. Course topics include: important publics of a sport event, organizing sport competitions, executing a sport event, sport facilities design, concept of tort and negligence, and risk management in sport.

**APA337 Theory of Coaching**

AUs: 3, Prerequisites: NIL, Semester 2

This course will focus on issues related to the effective coaching of young athletes. Discussions will be centered on theoretical concepts, yet placed in the context of practical applications for the local competitive environment. The content from NCAP Level 1, 2 and 3 will be covered. If participants so wish, they may register for the NCAP Level 3 certification. This certification will be conferred on participant's meeting the assessment requirements and paying the appropriate fee to the Singapore Sports Council.

**APA338 Adapted Physical Education & Sport**

AUs: 3, Prerequisites: NIL, Semester 2

Student teachers with special needs, like all other student teachers, need to develop movement control and efficiency of movement in fine and gross motor skills. They can, and should, be equipped with the necessary skills and knowledge to participate in modified and regular games and sporting events. The effective physical education teacher can encourage and plan for successful integration of student teachers with special needs in mainstream physical education lessons or inclusive physical activity settings. This introductory course introduces pre-service PE teachers to the area of adapted physical education and to the different disability conditions. This course aims to equip pre-service teachers with the foundation knowledge and skills to integrate students with special needs into the regular PE/physical activity program.

**APA402 Teaching Effectiveness in Physical Education**

AUs: 3, Prerequisites: NIL, Semester 1

This course covers a range of topics relevant to the teaching of physical education in schools. It examines student teachers' concerns arising from their teaching experiences and addresses these in relation to the research on teaching effectiveness in physical education. Teacher socialization issues that occur in schools are discussed. Observer systems that can be used to analyse the effectiveness of the teacher and the management of student behaviours in teaching settings are introduced.

**APA403 Curriculum Design in Physical Education**

AUs: 3, Prerequisites: NIL, Semester 1

This course will build on the knowledge and theory gained in the Instructional Methods and Strategies Units. The content will focus on issues related to the development and assessment of physical education curricular and attention will be given to the PE curriculum in Singapore.

**AAP101 Understanding Essential Mechanics**

AUs: 3, Prerequisites: NIL, Semester 1

Vector algebra and kinematics; Newton's laws and simple applications; Friction; Circular motion & universal gravitation; Conservation laws: Rigid body kinematics and dynamics; oscillations; introduction to continuous media. Supplementary material: Solution of linear differential equations and use of Mathematica or Maple. These topics are taught with special emphases on linkages to the current school curricula.

**AAP102 Optics and Waves**

AUs: 3, Prerequisites: NIL, Semester 1

**Geometrical Optics:** Basic concepts in geometrical optics: Fermat's Principle; Reflection and refraction; Thin Lens. **Physical Optics:** Wave Motion and equation, Harmonic Waves; Phase and Phase Velocity; The Superposition of Waves; Standing Waves; Beats; Group Velocity; Interference; Diffraction; Polarization. These topics are taught with special emphases on linkages to the current school curricula.

**AAP103 Electricity and Magnetism**

AUs: 3, Prerequisites: NIL, Semester 2

Electrostatics; Electric field; Gauss's law; Electric potential energy and potential; Electric dipoles; Capacitance. Energy stored in electric field. Electric current, Ohm's law, resistivity; Kirchhoff's law; DC circuit. Magnetism; Magnetic field; Bio-Savart law; Ampere's Law. Force between currents carrying wires. Torque on a current loop and applications such as galvanometers, motors and loudspeakers. Charge particles in E and B fields - Hall effect and mass spectrometer. Electromagnetic Induction; Faraday's law and Lenz's law. Electric generator. Eddy currents. Transformer and other applications of induction such as microphone, tape recording and seismograph. Inductance: self and mutual. Energy stored in magnetic field. Analysis of AC circuit, including LRC. Resonance. Impedance matching. These topics are taught with special emphases on linkages to the current school curricula.

**AAP104 Physics Laboratory I**

AUs: 3, Prerequisites: AAP101, Semester 2

Experimental techniques, errors and statistics. Introduction to computer aided experimentation and data loggers, with special emphasis on the use of dataloggers in school context. Measurement of length, time and temperature. Free fall and projectile motion. Accelerated motion. Conservation of energy, impulse and momentum, airtrack, damped and driven oscillators, resonance and vibrating strings. Heat transfer experiment. Electrical awareness, multimeter and oscilloscope. Electric and magnetic fields. Linear and nonlinear devices. Resistors, capacitors, and inductors. Modern circuits. Geometrical and physical optics.

**AAP201 Modern Physics and Special Relativity**

AUs: 3, Prerequisites: NIL, Semester 1

Galilean Relativity and transformation. Michelson-Morley Experiment; Postulates of relativity and implications: simultaneity and clock synchronization, time dilation and length contraction. Lorentz Transformation including Fizeau's experiment. Paradoxes of relativity: Pole and barn paradox, and twin paradox. Relativistic mechanics:

energy and momentum and relativity in nuclear & particle physics. Blackbody radiation; Photoelectric effect; Compton scattering; Atomic structure: plum-pudding model, Rutherford's Model of Atom and Bohr's theory. Wave-particle dualism; Davisson and Germer experiment, Heisenberg Uncertainty principle, Wave-function, Schrödinger's theory of quantum mechanics. Nuclear Physics: Nuclear shape and size, Nuclear stability, Binding energy, Radioactivity, concept of half-life and mean life, conservation laws; Nuclear fission and fusion. These topics are taught with special emphases on linkages to the current secondary school curricula.

### **AAP202 Exploring Thermal Physics**

AUs: 3, Prerequisites: NIL, Semester 1

Temperature. Zeroth Law of Thermodynamics. Thermal expansion. Specific and latent heat. Ideal gas law. Heat transfer. Stefan-Boltzmann law. Kinetic theory. Mean free path. Diffusion. Internal energy & First Law of Thermodynamics. Enthalpy. Equipartition theorem. Heat capacities of gases. Adiabatic processes. Heat engines and efficiency. Carnot cycle. Reversibility. Second Law of Thermodynamics. Entropy: order & disorder. Free Energy and chemical thermodynamics. Boltzmann statistics. Maxwell distribution. Quantum statistics. Fermi-Dirac distribution. Bose-Einstein distribution. Planck's radiation law. Debye theory of solids. These topics are taught with special emphases on linkages to the current secondary school curricula.

### **AAP203 Electromagnetism**

AUs: 3, Prerequisites: AAP103, Semester 2

Polarization; Dielectrics and their applications. Macroscopic and microscopic fields in dielectrics. Electric displacement vectors. Electrostatic energy. AC Circuits. Electromagnetic waves in free space and isotropic insulating materials. In addition, a vast variety of interesting topics are covered in this course: Lightning, Pacemakers, Electric Shock Treatment, Electrocardiograms, Metal Detectors, Musical Instruments, Magnetic Levitation, Bullet Trains, Electric Motors, Radios, TV, Car Coils, Superconductivity, Aurora Borealis, Rainbows, Radio Telescopes, Interferometers, Particle Accelerators (a.k.a. Atom Smashers or Colliders), Mass Spectrometers, Red Sunsets, Blue Skies, Haloes around Sun and Moon, Color Perception, Doppler Effect, Big-Bang Cosmology. These topics are taught with special emphases on linkages to the current school curricula.

### **AAP204 Physics Laboratory II**

AUs: 3, Prerequisites: AAP103, Semester 2

Analogue electronics: Impedance of resistors, capacitors and inductors, characteristics of diodes, transistors and operational amplifiers. Digital Electronics: Introduction to types of logic gates e.g. CMOS, TTL. Use of logic gates flip flops for counters, displays and binary arithmetic. Using electronics for physics experiments. Exposure to real life applications of electronics. The experiments are selected with special emphases on linkages to the current school curricula.

### **AAP301 Solid State Physics**

AUs: 3, Prerequisites: AAP201, Semester 1

Introduction to basic concepts of solid-state physics and materials sciences. Crystalline states and symmetry; reciprocal lattice; phonons and their interactions; free electron theory of metals and Fermi surface; Density of States and energy bands. Semiconductors. Electrons, holes, donors and acceptors. Carrier concentrations in intrinsic and extrinsic materials. Transport Properties. Carrier mobility and ways to measure it. Hall Effect. Physics of P-N Junction and MOSFETs. Semiconductor processing. Physics of low dimensional solids. Nanostructures and nanotechnology. Teaching of solid state physics at secondary level. These topics are taught with special emphases on linkages to the current school curricula and school-based projects.

### **AAP302 Quantum Mechanics**

AUs: 3, Prerequisites: AAP101,201, Semester 1

De Broglie's hypothesis and wave-particle duality; principle of superposition; The Schrodinger theory of quantum mechanics; wave function and its interpretation; probability density; concepts of quantum states; state vectors and its properties; bra and ket vectors and the vector space; the basic postulate of quantum mechanics; the operators and expectation values; eigenfunction and eigenvalues; one-dimensional potential problem; the orbital angular momentum and the spin angular momentum; three dimensional potential problem; the central potential problem; the hydrogen atom; symmetry and degeneracy. Teaching of quantum theory at secondary level. These topics are taught with special emphases on linkages to the current school curricula and school-based projects.

### **AAP303 Material Science**

AUs: 3, Prerequisites: AAP201, Semester 2

Introduction to advanced materials. Atomic Structure and Bonding in solids, Atomic arrangement and crystal structure. Imperfections in solids, diffusion; liquid crystals, anisotropy; Phonons, phonon transport; Electronic Properties of Materials; Free electrons, Band formation, energy gaps and Fermi energy; Semiconducting materials; Magnetic Properties of Materials; Optical Properties of Materials; Biomaterials, Nanomaterials and nanotechnology.

Physics and applications of analytical techniques for materials characterization. These topics are taught with special emphases on linkages to the current school curricula and school based projects.

**AAP304 Physics Laboratory III**

AUs: 3, Prerequisites: AAP201, Semester 2

Experiments covering a broad range of modern physics such as Franck-Hertz, Faraday, and Compton experiments. X-ray diffraction, Hall effect, charge carrier measurement, nuclear magnetic resonance, superconductivity, alpha, beta particles and gamma radiation, measurement of speed of light, fine structure constant, Boltzmann constant, and Planck constant. Wave propagation and transmission lines. Breakdown of gases. Interference spectroscopy and holography. Optical communication. The course also stresses the basic experimental techniques and data acquisition and analysis, and written and oral presentation of experiment results. These topics are taught with special emphases on linkages to the current school curricula and school-based projects.

**AAP431 Plasma Science and Technology**

AUs: 3, Prerequisites: AAP203, Semester 1

Introduction to plasma physics and applications. Vacuum systems and handling. Kinetic theory of gasses. Electrodynamics of ionized gases. Motion of charges in electric and magnetic fields. Plasma generation, discharge characteristics and devices. Plasma properties. Plasma-surface interaction. Chemically active plasmas and applications for plasma assisted deposition, etching, implantation and surface modifications. Plasma TV. Plasma assembly of nanomaterials. High temperature plasmas and controlled thermal nuclear fusion. Plasma diagnostics and simulation. These topics are taught with special emphases on linkages to the current school curricula and school-based projects.

**AAP432 Atomic and Molecular Physics**

AUs: 3, Prerequisites: AAP302, Semester 1

One-electron atoms: The Schrodinger equation and its solution for a Coulomb field, spin-orbit interaction energy, relativistic correction of state energy, the Lamb shift, radiative processes and selective rules, applications of the Schrodinger equation. Two-electron atoms: Electrostatic interaction and exchange degeneracy, helium ground state and Pauli exclusive principle, singlet and triplet energy states of helium. Multielectron atoms: The central-field approximation, energy ordering of the outer filled subshells, alkali atoms, the L-S and J-J couplings, allowed terms, multiplet structure and Lande interval rule, Doppler shift and broadening, applications in X-ray line spectra. Molecular Physics: Separation of electronic and nuclear motion, potential energy function for a chemical bond, vibrational energy states of diatomic molecules, rotational energy states for a rigid molecule and a nonrigid rotator, rotational energy-level population, applications in rotation-vibration spectra of linear molecules and simple polyatomic molecules. These topics are taught with special emphases on linkages to the current school curricula and school-based projects.

**AAP433 Relativity**

AUs: 3, Prerequisites: AAP302, Semester 1

Basic postulates of the Special Theory of Relativity; the relativistic dynamics; the geometry of space-time; the Minkowski diagram; Relativistic dynamics including elastic and inelastic collision; particle decays and production; relativity and electromagnetism; space-time curvature; elementary tensor analysis including tensor algebra and tensor calculus; the principle of general relativity; Einstein's theory; the field equation; the experimental tests of the general theory of relativity. These topics are taught with special emphases on linkages to the current school curricula and school-based projects.

**AAP434 Spectroscopy**

AUs: 3, Prerequisites: AAP302, Semester 1

Interaction of electromagnetic radiation with matter, energy levels, basic instrumentations, resolving power. Atomic spectroscopy: Emission spectra of hydrogen and sodium, X-ray spectroscopy, electronic structures of atoms and periodicity of elements, applications in analysis of elements and astronomy. Ultraviolet and visible spectroscopy: Instrumentation, colour in transition metal compounds, applications in organic chemistry. Microwave spectroscopy: Theory of rotation of molecules, rotational spectra of diatomic molecules, and of polyatomic molecules, microwave spectrometer, applications in identification of gases and in chemical analysis. Infrared spectroscopy: Theory of the vibrating diatomic molecule, diatomic vibrating rotator, vibration-rotation spectra of diatomic, linear and polyatomic molecules, interaction of rotations and vibrations, applications in the analysis of molecular structure of linear molecules. These topics are taught with special emphases on linkages to the current school curricula and school-based projects.

**AAP435 Astrophysics**

AUs: 3, Prerequisites: AAP203, Semester 1

General Introduction. Qualitative overview of stellar evolution: nucleosynthesis, white dwarf stars, neutron stars, black holes. Qualitative overview of cosmology. Measurement techniques: radiation, optics, telescopes & interaction of matter with radiation. Stellar parameters. Mass determination. Spectra classifications, Hertzsprung-Russell Diagram. Stellar atmospheres. Interiors of stars: Hydrostatic equilibrium. Pressure equation of state. Stellar Energy Sources. Transportation of energy. Main sequence. Star Formation: Formation of protostars. Evolution of stars (pre, main & late stages). Fate of massive stars. White Dwarfs. Neutron Stars. Black holes. Chandrasekhar Limit. The Solar System. The Galaxies. Large scale structure. General cosmology (the Early Universe). These topics are taught with special emphases on linkages to the current school curricula and school-based projects.

#### **AAP436 Condensed Matter Physics**

AUs: 3, Prerequisites: AAP302, Semester 1

The focus of this course is the liquid state. Forces, energies, and timescales in condensed matter, with emphasis on the liquid state: bonding in liquids and structure of liquids – radial density function, Clausius virial theorem, internal energy and liquid crystals. The dynamics of a liquid: the cell model, diffusion, viscous flow, and ionic conduction. Properties of liquid: Mechanical, thermal, electrical, optical, magnetic, as well as surface tension and viscosity -- experimental data and theory. Understanding of the speed of sound in gas, liquid and solid. Change of phase and the Gibbs free energy. Initiation of a phase transition: Nucleation and growth -- experimental data and theory. Introduction to the colloidal state of matter (liquid-in-liquid, solid-in-liquid and liquid-in-gas) and polymers (glass, rubber, and polymer crystals). These topics are taught with special emphases on linkages to the current school curricula and school-based projects.

#### **AAP437 Thermonuclear Fusion and Radiation**

AUs: 3, Prerequisites: AAP203, Semester 1

World Energy Scenario, The energy crisis, Need to develop a relatively clean long-term alternative energy source; Thermonuclear Fusion: The Nuclear fusion as energy source, Possible Fusion Reactions, Fusion Reaction Cross section; The Fundamentals of Fusion Process: The Energy Balance, Bremsstrahlung Power Loss, Cyclotron Power Loss, Effect of Impurity, Ideal Plasma-Confinement Criterion; Plasma Confinement: The Magnetic Confinement, Open-Ended Confinement-Magnetic Mirror, Closed-ended Toroidal Confinement; The Tokamak: General consideration of toroidal devices, Magnetic configuration of Tokamak, Tokamak equilibrium and stability; Laser Fusion: ICF Power gain and Driver requirements, Thermonuclear Burn Fraction, Implosion and compression of matter; Ignition and Propagation burn; The Plasma Focus: General characteristics of Focus Device, Current sheath dynamics in plasma focus, Computational model of Plasma focus device; Plasma Radiation Sources and Application: Development of focus device as multiple radiation source of x-rays, electron beam, ions and neutron, diagnostics and application of focus device to microlithography, thin film processing and thin film deposition. These topics are taught with special emphases on linkages to the current school curricula and school-based projects.

#### **AAP438 Physics Research Projects**

AUs: 3, Prerequisites: NIL, Semester 1

Student teachers taking Physics as AS1 subject should be exposed to the various stages of research work to allow them to supervise and facilitate student projects in school and also to enable them to take up higher degree by research in the future. The objective of this course is to provide them with research experience. In this course, the student teacher will be asked to carry out a short research project, either theoretical or experimental, under the supervision of an academic staff. They will learn how to formulate a research proposal, process of gathering data and the technique of analyzing data to draw proper inferences.

#### **AAP439 Intermediate Quantum Mechanics**

AUs: 3, Prerequisites: NIL, Semester 1

The formalism of quantum mechanics, linear vector spaces, ket and bra vectors. Matrix description of quantum states and operator. The harmonic oscillator via ladder operators, angular momentum and spin, the hydrogen atom. Time-independent perturbation theory, the variational principle. Scattering theory, Born approximation and partial wave analysis. Identical particles.

#### **AMX301 Multicultural Studies: Appreciating and Valuing Differences**

AUs: 3, Prerequisites: NIL, Semester 1

This course introduces student teachers to the implications of living in a diverse society—primarily through the prisms of “race” and ethnicity, but also through addressing issues of class, gender, and other social structures. In an increasingly complex world, understanding the dynamics suggested by multiracialism, multiculturalism and “cultural relativism” is an important step in gaining the necessary perspective of one’s relationship to community, society and the larger world.

#### **ALK101 Communication Skills for Teachers**

AUs: 2, Prerequisites: NIL, Semester 1

This is a practical course designed to provide student teachers with the oral and written skills necessary for effective communication as teachers in the classroom and in their professional interaction with colleagues, parents and the general public. Student teachers learn about vocal health care and quality, and the practice of good voice production. They are familiarized with the use of a pronunciation dictionary to help them resolve pronunciation and word stress difficulties. They become aware of the importance of considering the purpose, audience and context when communicating and learn how to communicate effectively to promote student learning. They also engage in practical hands-on activities of making oral and written presentations in a variety of school contexts. Built into the tutorials are opportunities for student teachers to reflect on their practices as well as on-going assignments and oral and written presentations to assess their application of the knowledge and skills that they acquire during the course.

### **ALS101 Academic Discourse Skills**

AUs: 3, Prerequisites: NIL, Semester 2

This course will introduce student teachers to academic reading materials and teach them how to produce academic discourse of their own with regard to researching and writing assignments in their chosen areas of academic specialisation. The course will introduce student teachers to the conventions of academic writing, including citation and documentation procedures, and provide them with a level of expertise in primary and secondary data-gathering. They will learn how to generate and develop argument, support it with evidence, and present it in a coherent manner. In addition, they will gain some experience in other activities related to academic writing such as time-management, group collaboration, and liaising with the research supervisor.

### **APR101 School Experience**

AUs: 0, Prerequisites: NIL, Semester 1

This is 2 weeks long, with 1 week in a primary school and 1 in a secondary school. The purpose for this is to provide student teachers opportunities to observe lessons in the primary and secondary classrooms.

### **APR201 Teaching Assistantship**

AUs: 3, Prerequisites: APR101, Semester 2

Next the student teachers will undergo a 5-week TA. Its purpose is to provide them opportunities to observe their Cooperating Teachers (CTs) teach and to reflect on the roles and responsibilities of a teacher.

### **APR301 Teaching Practice I**

AUs: 6, Prerequisites: APR201, Semester 3

The 3<sup>rd</sup> component is TP1. It is 5 weeks long. Its purpose is to help the student teachers begin to learn to teach independently. They will learn to plan their own lessons to teach, prepare the relevant resources and manage pupils independently, in consultation with their CTs. They will continue to be provided opportunities to observe their CTs teach.

### **APR401 Teaching Practice II**

AUs: 12, Prerequisites: APR301, Semester 4

TP2 is the last component of the Practicum, stretching over a period of 10 weeks. It will expose the student teacher to opportunities of teaching and managing students for the subject that he/she has been trained to teach. By this stage of professional training, the student teacher will be exposed to the multi-faceted role of the teacher, such as planning, instructing, managing and assessing pupils' learning, as well as having some practice in using appropriate enrichment and remedial learning activities for target students in classrooms. The 10-week duration will also provide time for the student teacher to have a more holistic school attachment experience which would include exploring other aspects of a teacher's life besides classroom teaching, for example, observing how CCAs are managed.

### **AAA180 Introduction to Chinese-brush Painting**

AUs: 3, Prerequisites: NIL, Semester 1/2

Studio practice of brush technique and the exploration of different subject matters, such as bird, flower, fish, landscape and others.

### **AAA181 Introduction to Printmaking**

AUs: 3, Prerequisites: NIL, Semester 1/2

Investigates image making through a range of printmaking techniques.

### **AAA182 Introduction to Contemporary Sculptural Practice**

AUs: 3, Prerequisites: NIL, Semester 1/2

A study of the skills and knowledge pertinent to three-dimensional art, allowing for exploration of contemporary sculptural practices.

**AAA183 Life Drawing**

AUs: 3, Prerequisites: NIL, Semester 1/ 2

Introduction to drawing through an exploration of the figure in both traditional and contemporary frameworks.

**AAA184 Drawing**

AUs: 3, Prerequisites: NIL, Semester 1/ 2

Investigates the nature of drawing, from traditional art practice to the range of meanings drawing has in contemporary art.

**AAA280 Introduction to Ceramics I**

AUs: 3, Prerequisites: NIL, Semester 1/ 2

Intensive course which involves the development of skills and production of clay works through inquiry and handbuilding techniques.

**AAA281 Introduction to Ceramics II**

AUs: 3, Prerequisites: NIL, Semester 1/2

Intensive course which involves the development of skills and production of clay works through inquiry and the use of the potter's wheel.

**AAA282 Digital Media and Visual Arts: Still Imaging**

AUs: 3, Prerequisites: NIL, Semester 1/ 2

Introduction to contemporary art making with digital imaging tools. Participants will experience first hand current art making methodologies through theme based works. The course will go through the processes of concept development, basic software tutorials, production and group critiques. Very basic knowledge of Adobe Photoshop and possession of any kind of Digital Still Camera is required.

**AAA283 Arts Across the Borders**

AUs: 3, Prerequisites: NIL, Semester 1/ 2

A study focused on the discovery and understanding of the artistic heritage, psychogeography and socio-cultural significances of a specific part of Singapore. For 2005, the site chosen will be the very vibrant and colourful area of Joo Chiat/ Katong. "Borders" in this sense may comprise the historic, contemporary, architectural, cultural, social, political, psychic and imaginary boundaries that define every day life in the area. A considerable part of the course will be spent doing experiential work (maps, photography, video itself). Course work will involve comprising Situationist-inspired interventions that take as starting point the ways that this particular quarter and its inhabitants perform.

**AAA284 Visual Arts in Asia**

AUs: 3, Prerequisites: NIL, Semester 1/ 2

Introduction to the various art forms in Asia. Influences of historical background, philosophical beliefs and trade has on symbolism, forms and techniques of artistic practices.

**AAA285 Screen, Scream & Psychoanalysis: An Introduction to Film Theory**

AUs: 3, Prerequisites: NIL, Semester 1/ 2

The course offers an introduction of screen theory and psychoanalysis. Lectures, readings, group projects and most significantly, the viewing of a whole series of films, from classic contemporary (Hitchcock to Almodovar) will form the basis of the course work.

**AAA286 Traditional and Creative Chinese Painting**

AUs: 3, Prerequisites: NIL, Semester 1/ 2

Basic skills of Chinese Painting, including the use of the Chinese brush, the painting of basic strokes, composition and the use of colour. Opportunities will be provided for students to explore new ideas of combining calligraphy and painting as an attempt to create a new approach to Chinese painting.

**AAA287 Digital Media and Visual Arts: Moving Image**

AUs: 3, Prerequisites: NIL, Semester 1/ 2

Introduction to contemporary art making with digital video tools. Participants will experience first hand current art making methodologies through themed based works. The course will go through the processes of concept development, basic software tutorials, production and group critiques. Very basic knowledge of any video editing software and possession of any kind of Digital Video Camera would be beneficial but not mandatory.

**AAA288 Digital Media and Visual Arts: Exploring Modernity through Digital Imaging**

AUs: 3, Prerequisites: NIL, Semester 1/ 2



Who is Picasso? What is Minimalism? Using digital imaging as an entry point, this course looks to introduce participants to concepts of modern art while providing one with basic digital imaging and imaging software skills. Through studio projects, lecture and class discussion, participants will explore and learn about key movements in art history through possibilities in digital imaging.

**AAC180 Chinese Calligraphy**

AUs: 3, Semester 1 / 2

Prerequisites:

A1, A2, B3 or B4 in "AO" CL2 (or CL)

A1 or A2 in "O" Lvl CL1 (or HCL)

A, B, C, D or E in "A" Lvl CL2 or CL1 (or HCL)

(Student teachers specialising in Chinese are **exempted** from these pre-requisites)

Origin and development of Chinese calligraphy; various styles; lives and styles of prominent calligraphers; the use of the Chinese brush; techniques in writing the basic strokes; demonstrations and practices.

**AAC280 Introduction to Traditional Chinese Customs and Beliefs**

AUs: 3, Semester 1 / 2

Prerequisites:

A1, A2, B3 or B4 in "AO" CL2 (or CL)

A1 or A2 in "O" Lvl CL1 (or HCL)

A, B, C, D or E in "A" Lvl CL2 or CL1 (or HCL)

(Student teachers specialising in Chinese are **exempted** from these pre-requisites)

An introduction to traditional Chinese customs and beliefs as reflected in popular idioms and moral precepts, myths, legends and festivals.

**AAU280 Voice Studies & Production**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

Aims to strengthen and enhance both the student teachers' natural voice and their use of the voice in various working contexts, particularly that of the school classroom. Uses established approaches to develop physical and personal awareness, a feeling for the dynamics of language, and understanding of basic theory of physiology and voice production.

**AAU281 Introduction to Playwriting**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

The fundamentals of writing for the stage. The one-act play as a useful introduction to dramatic language and structure. The one-act play as an elaboration of a single incident, theme and subject matter, and the "discovery" of theme as an action's controlling ideas, plot construction and related elements such as beginnings, endings, proportion, climax, pacing, the building of suspense, characterisation through action and through dialogue; and the revision of dialogue.

**AAU282 Shakespeare on Film**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

The aesthetic and technical aspects of adapting or translating Shakespearean drama to the screen. Consideration of such cinematic adaptations as Oliver's Othello, the Nicol Williamson and Mel Gibson versions of Hamlet, Kenneth Branagh's production of Henry V, and Macbeth and King Lear as rendered by Akira Kurosawa.

**AAU283 Drama in the Literature Classroom**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

How to apply drama strategies to the teaching of literature. Range of process drama techniques to enhance creative learning outcomes in the teaching of literature. Focus on a core literary text currently on the curriculum.

**AAU284 Drama in the Primary School Classroom**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

How to apply drama strategies in the Primary School Classroom. Range of process drama techniques to enhance creative learning outcomes across the Primary School curriculum, particularly in history and the social sciences.

**AAU285 Visual Culture and Performance in Contemporary Singapore**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

Provides a critical introduction to: visual culture in contemporary Singapore; our everyday performance and negotiation of visual culture; the aesthetic strategies with which contemporary arts and performance practice engage visual culture. Case material may be drawn equally from current local/international visual culture forms (film, television, movies, advertising, fashion, public spaces & shopping centres) and local/international arts and

performance practice. Course sessions will take the form of lectures, videos, excursions to shopping centres, performances & exhibitions, experimental improvisations, group discussions and presentations.

**AED280 Problem-solving Strategies of Primary School Pupils**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

Strategies of investigation; imitation; imagination; language and manipulation; material-rich environment; problem, knowledge and discovery activities; ways of consolidating and generalising competencies; further elaboration.

**AED281 Basic Counselling Skills for Teachers in Initial Training Programme**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

This course is a practical 'how-to' guide to using basic counseling and helping skills for working with pupils. The main features include an introduction to the concepts of helping; an exploration into the concepts of mental and maladjustment with pupils; identification of pupils with behavioural and emotional problems; qualities of the effective teacher-helper; and the relationship and role of the teacher as a helper and teacher-counsellor. Study topics include: active listening; interpreting body language; basic helping skills; the ethics of helping; and different approaches and techniques in counseling and helping.

**AED282 Fundamentals of Group Guidance**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

This course introduces student teachers to the theory and practice of group guidance. An understanding of the history and development of group guidance, purpose of group guidance, group dynamics in the classroom, group theories, and developmental guidance to facilitate holistic development of pupils will be dealt with. A broad spectrum of techniques and approaches in group guidance will also be presented, covering themes of development and competencies in self-esteem, self-management, social awareness and management, and competencies in problem-solving and decision-making.

**AED380 Motivating Pupils to Learn**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

This course is designed to help student teachers understand the theoretical and practical considerations regarding motivating pupils in the classroom. Opportunities will be provided for participants to examine themes such as the psychological principles affecting pupils' learning, motivation and its relationship to classroom learning and pupil behavior, and theories of motivation. Throughout the course, student teachers will be making connections of theory to practice – examining effective strategies to motivate reluctant and disinterested learners and designing and evaluating motivational strategies in the classroom.

**AED381 Facilitating Asynchronous Online Discussion**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

This course will discuss how the asynchronous online discussion can be used as an effective instructional strategy within primary and secondary school contexts. The topics covered will include the integration of the asynchronous collaborative online discussion environment with the face-to-face approach, the role of the teachers in designing and evaluating the environment, and the use of scaffolds in the online discussion environment to facilitate critical thinking skills.

**AED382 Designing ICT-Based Constructivist Activities**

AUs: 2, Prerequisites: NIL, Semester 1 / 2

This course provides an opportunity for participants to learn constructivist learning theory and examples of how ICT tools may be used to support constructivist learning. We will also discuss how to assess constructivist learning. Opportunities will be provided for participants to design ICT enhanced learning activities using constructivist approach.

**AED383 Facilitating and Managing ICT-Supported Interdisciplinary and Collaborative Projects**

AUs: 2, Prerequisites: NIL, Semester 1 / 2

The participants will be introduced to the key features of an interdisciplinary project, skills of collaborative learning and scaffolding tools to design projects for primary schools. They are expected to work in groups of 4-5 to design the project, hold online meetings, conduct on-going group and individual reflections and maintain the project file in the online environment. At the end of this course, the participants will be equipped with the necessary knowledge and skills to conduct Project Work (PW) via the online and face-to face classroom setting.

**AED480 Problems and Issues in Singapore Education**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

A socio-historical study of problems and issues in Singapore Education; reform and school effectiveness; school drop-outs and the educational disadvantages of working class children; subject-centred and student-centred curriculum; co-operative learning and beginning teachers' concerns.

**AAE280 Creative Writing**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

Workshop approach to develop writing skills of student teachers in aspects of poetry, fiction or drama. Exploration of good models; student teachers' own writing process; and constructive critique of work produced.

**AAE281 Teacher Talk**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

Focuses on teachers' use of language (both oral and written) in the language classroom, examining the use of language for both instructional and regulative purposes. Analysis of teacher talk through video/ transcripts. A practically oriented course that will enable student teachers to apply theory to practice in order to enhance self-awareness and effectiveness in teaching through the good use of language.

**AAE282 Drama in Language Education**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

Introduction to the use of drama in the language classroom, focusing on techniques such as improvisation, hot-seating, role-play and mime to enhance learning and creativity. Development of a language curriculum incorporating drama.

**AAE283 Introduction to Children's Literature**

AUs: 3, Prerequisites: Not for student teacher whose AS is E Lang & E Lit, Semester 1 / 2

Examination of the range of major forms and genres in children's literature, focusing on important traditions, themes and conventions, and exploring their relevance to the linguistic and imaginative development of young readers. Areas of study may include: Western and Asian oral and written traditions, fairy tales, fables, myths, fantasy literature, picture books and 'classic' children's literature.

**AAR280 Literature and Travel**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

This course considers the significance of travel in different periods and across various geographical spaces. It will explore the ways in which writers represent the encounter with the Other and the foreign as well as the notion of travel itself. The following issues among others will be of particular significance: the relationship between travel and imperialism, the production and performance of the self in travel, travel as education, and the impact of travel on racial and gendered identities. Travel for pleasure and adventure will be considered together with other forms of travel like the pilgrimage and forced migration. Writers to be considered include Olaudah Equiano, Mary Kingsley, V.S. Naipaul, Jamaica Kincaid, Pico Iyer, Vikram Seth and Bruce Chatwin.

**AAR281 Poetry Workshop**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

Examination of variety of possible forms of poetic creativity, focusing on the characteristics of the genre, the function of intensity of expression and the role of originality. Student teachers are invited to experiment in original and individualistic ways, stretching the range of use of language, rhythm, voice and control.

**AAR282 Short Story Workshop**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

This course examines the demands of the short story form. What is a short story? What makes a good short story? How do you work on characters or engage the readers in a short story? Student teachers write their own stories as a way of responding to these questions.

**AAR283 Literature & Technology**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

This course introduces student teachers to the study of science fiction through an examination of major Sci-Fi films from 2001: A Space Odyssey (1968) to the present. We will also read three short, classic science fiction novels with close links to film: Margaret Atwood's *The Handmaid's Tale* (and its film adaptation); Philip K Dick's *Do Androids Dream of Electric Sheep?* (the source of *Blade Runner*); and Stanislaw Lem's *Solaris* (in relation to the two films made from it). We will be primarily concerned with the nature and politics of science fiction as a genre (or genres) and with the differences between literary and cinematic science fiction.

**AAR284 The City in Literature**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

The representation of the city in literature and art. Urbanisation, industrialisation, alienation and depersonalisation; educational advancement, centralised efficiency, commercial growth, independence of thought and social harmony. Is there a common bias against an accurate representation of the city?

**AFP180 Service Learning & Volunteerism**

AUs: 2, Prerequisites: NIL, Semester 1 / 2

The joy of sharing and volunteerism. Lectures to provide content and understanding of what service learning as a prelude to field experience. Student teachers to be involved in volunteer work of their choice either individually or as a group for a person or persons in need, community, school, NGO, or other relevant non-profit agencies locally or abroad, that would result in a contribution towards that person or community and also provide an opportunity for critical thinking and self reflection. Service-learning fieldwork to be over a sustained period of time of not less than 20 hours either during a semester or the vacation. Assessment by written report reflecting the following: experiences, problems faced and how they are overcome, benefits accrued to the party helped as well as to the student teacher, lessons learned, and advice to others in future. It is advised that this course be taken during the first two years of the Degree programme.

**AAG180 Human Impact on the Environment**

AUs: 3, Prerequisites: Non-Geography student teachers, Semester 1 / 2

This course will introduce the earth as a dynamic system consisting of interacting spheres that define the earth's global environment. Human impact and related environmental change in the atmosphere and ecosphere from the late Quaternary (about 12,000 years ago) to present will be examined. Emphasis will be placed on the types, evidences and causal mechanisms of these environmental changes. In particular, the role of human on these changes will be discussed.

**AAG181 Singapore in Asia**

AUs: 3, Prerequisites: Non-Geography student teachers, Semester 1 / 2

This course integrates geographical skills and different study strands – human, environmental and technical – in the study of Singapore in the Asian region. The global positioning of Singapore and the contemporary challenges to development that it faces in a highly competitive and fast changing global environment will be the framework for the study of issues and problems that have emerged - SARS, bird flu, haze, terrorism, implications of cross-straits relations between China and Taiwan, economic liberalization in China and India among others.

**AAG280 Urban Environmental Management in the Asia-Pacific**

AUs: 3, Prerequisites: Non-Geography student teachers, Semester 1 / 2

The lectures and seminars designed for this course aim to inform course participants of the current global, regional and local debates about environmental issues and sustainable development that are relevant to urban societies in the Asia-Pacific region. The course is also aimed at encouraging a critical and analytical engagement by the course participants with the issues and policy implications that arise from the debates that are going on in sustainable development. With the economic boom in China and India that has been driving substantive and major changes in urban consumption and production, there are a growing list of environmental and sustainability issues that confront our urban societies today because of global development and competition - local environmental degradation and the local responses as well as implications arising from such competitiveness.

**AAG281 Introduction to Geographical Information Systems**

AUs: 3, Prerequisites: Non-Geography student teachers, Semester 1 / 2

Conceptual and technical foundations of geographical information systems (GIS). Basic skills for collecting, storing, manipulating, analysing and presenting geo-spatial data and information. Urban and regional planning, natural resource management, environmental planning through the implementation of modern GIS software. Hands-on practical exercises using GIS with real world data.

**AAG282 Contemporary Chinese Cities**

AUs: 3, Prerequisites: Non-Geography student teachers, Semester 1 / 2

The course examines the rapid urban change following market reforms in the 1980s. From restricted access controlled by the 'hukou system', Chinese cities have since opened up vast opportunities to foreign investors, and China's own nationals, whose dynamic responses to market expansion have led to dramatic spatial, economic and social transformations. Issues of investment policies, global-local integration and dilemmas of regulated planning versus unregulated urban sprawl, environmental impacts, floating population and rising urban poverty are used as case studies.

**AAG283 Understanding Japan: Place, People, Perceptions**

AUs: 3, Prerequisites: Non-Geography student teachers, Semester 1 / 2

The course introduces background knowledge of Japan and the perceptions of other East Asian nations towards the country. It comprises three parts. The first part covers the geography of resource distribution and production as well as population dynamics and governance regimes. The second part looks into current changes and problems of development including the ongoing process of political, economic and social transformations. The third section examines the contrasting views toward the island state – the appreciation of its arts and culture, the condemnation of its aggression in the past and the perceived threat of its military resurgence. The “Beauties of Japan” will discuss the popularization of Japanese traditional culture and practices in East Asian nations such as chado, ikebana, kendo, judo and Japanese cuisine, movies and songs. “Ugly Japan” will review the perceptions and controversies with regard to the roles Japan will and can play in the region.

#### **AAG284 Development and Nature Conservation**

AUs: 3, Prerequisites: Non-Geography student teachers, Semester 1 / 2

The rate of urbanization has escalated in the last century, especially in the humid tropics, with associated increase in the number of people residing in the urban centres. This increase in urban centres has led to dwindling of natural areas with severe consequences on the natural environment. This course deals with the impacts of rapid urban growth on the natural environment and discusses the issues related to ecosystem conservation, nature area management, urban planning and conservation, restoration of degraded ecosystem. Case studies from the region will be discussed.

#### **AAH180 Contemporary Singapore**

AUs: 3, Prerequisites: Non-History student teachers, Semester 1 / 2

Provides student teachers unfamiliar with the history of Singapore with an overview of how our past is linked with our present. Topics covered include the founding of Singapore, growth of our port, origins of our plural society, the Japanese occupation, the conflicts of the tumultuous 1950s, merger and separation, and political and economic transformation after 1965.

#### **AAH181 Museum Studies – An Interdisciplinary Approach**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

Overview of historical background and development of museums. How museums conceptualise their exhibitions to make them interactive and engaging. Conduct effective fieldtrips to museums and develop interdisciplinary learning experiences drawing from the disciplines of History, Social Studies and Art. Fieldtrips will be conducted to the various museums in the Museum Roundtable.

#### **AAH182 Topics in Military History**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

The chronology and theme focus of this course will vary from year to year. Primary emphasis on the military history of early modern and modern Europe, the United States, and the world wars.

#### **AAH183 Film and Propaganda**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

The use of film as propaganda in the twentieth century. Focuses on how Hitler and the Nazis used film for propaganda purposes in Germany and traces the skilful manipulation of film during wartime for propaganda purposes by leaders of other nations as well as those of Nazi Germany.

#### **AAH184 Film as History**

AUs: 3, Prerequisites: Non-History student teachers, Semester 1 / 2

History does not only include examining the written word. Other mediums, such as film, can be used in looking at the past. This course covers the use of film as a source for exploring the past, and how history has been represented in film. The history of cinema and television is also studied. The emphasis is on empowering student teachers to interpret films in critical and analytical ways, as well as teaching student teachers how films are created. The skills of historical interpretation and writing history are taught.

#### **AAH185 Biography and History**

AUs: 3, Prerequisites: Non-History student teachers, Semester 1 / 2

Biography is one of the most popular and enjoyable ways of reading history. Biographers employ a range of interesting methods to discover their subject. Psychoanalysis of the individual's action and using the memories of the subject and those of others who knew him or her are just a few. Studies how life stories are written not only of the “great” figures of history but also of the “unknown” men and women who also “made history.”

#### **AAH280 Women in History**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

Seeks to redress an imbalance in history by looking at “her-story.” How women are viewed and written about will be examined through the use of secondary and primary sources such as newspapers, magazines, films, letters, memoirs and diaries. Themes and sample case-studies may be taken from a number of periods and places for comparisons of different traditions, cultures, and religions in order to examine how these affect the family, social, economic and political roles and contributions of women.

**AAH281 Introduction to International Relations**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

Basic introduction to international relations and key issues governing world politics. Emphasis is on three core international relations theories, namely: realism, liberalism, and Marxism. Key issues and theories are analysed in relation to past and current events, and in relation to the themes of conflict, change and cooperation.

**AAH282 Tradition and Revolt in Southeast Asia**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

The rural protests, peasant uprisings and peasant wars under colonial rule are considered to be efforts to check the intrusive influence of modernization and to restore the traditional values which seemingly reflect a golden age in the perceptions of an overwhelmingly rural population in Southeast Asia. This course will examine how far notions such as tradition and rebellion capture the nature of peasants’ responses towards the rapid socio-economic changes under colonial rule. The large-scale wars and rebellions after decolonization suggest a radical shift in the peasants’ political consciousness and tactics before rapid economic growth pacified the rural population. The course will explore different ways of acquiring an understanding of rural protests, peasant uprisings and peasant wars with reference to the experience of rural population in Indonesia, Burma, Malaya, Philippines, Vietnam and Cambodia between 1880 and 1980.

**AAH283 Contemporary International History**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

This course looks at some of the main controversies in twentieth century international history, right up to the present day. It will include aspects of international relations such as decision-making and the factors and processes that affect it, and clashes between ideologies and beliefs. Typical topics might include the origins of a war, the decision to drop the atomic bomb, the end of empire in a colony, an international or supranational organisation, the history of a current or recent conflict, terrorist groups, and recent American foreign policy. The unifying themes may vary according to recent events, so prospective students should refer to the HSSE website for current details.

**AAD280 Jawi Reading and Writing**

AUs: 3, Prerequisites: Pass in ‘O’ level Malay or equivalent; Not open to students whose AS is Malay Language, Semester 1 / 2

Literacy in Jawi script. Practise in reading and writing Jawi script. *Jawi* as in newspaper and Malay classics.

**AAF381 Contemporary Malay Society**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

The course aims to teach student teachers about the aspects of change, adaptation and accommodation that are taking place in the Malay society as they encounter the process of modernization and urbanization. By highlighting some of the key issues that are discoursed in Malay society such as Malay ideas on development, educational attainment and cultural heritage, we shall have insights into the dynamics and the negotiations for advancing reforms and addressing some of the challenges and problems that confront the Malay society.

**AAF481 Muslim Intellectual Traditions**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

The course aims to teach students teachers about the diversities and the dynamics of Muslim intellectual traditions that have evolved throughout history, with a particular attention to explain how historical, socio-cultural, political and ideological factors have shaped an intellectual tradition. Highlighting the functions of intellectual traditions should make student teachers aware of the components of intellectual culture that include the notion of advancement, diagnosis of human predicament and the moral-ethical imperatives in the search for truth and rationality.

**AAM180 History of Mathematics**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

Open to both mathematics and non-mathematics majors. Student teachers survey the personal lifestyles and philosophies of several well-known mathematicians, from Archimedes to Einstein. This will highlight the historical development of certain branches of mathematics.

**AAM181 Statistics Around Us**

AUs: 3, Prerequisites: Non-AS Math student teachers, Semester 1 / 2

Introductory course in statistics for student teachers who need to understand basic statistical concepts in their own field of study. Topics covered include: sampling techniques, generation of random numbers, applications and examples of distributions, e.g. binomial, Poisson, geometric distributions etc. The use of appropriate statistical software. This elective is not for student teachers taking AS Mathematics.

**AAM182 Introductory Mathematics**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

Basically a bridging course for AS mathematics student teachers who require it. Topics to be covered are: number systems, set theory, co-ordinate geometry, functions and relations, trigonometry, matrices and vectors, methods of proofs, complex numbers, binomial theorem, partial fractions, probability and statistics.

**AAM183 Understanding Higher Mathematics**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

Limits and continuity. Differentiation and applications of differentiation. Integration and applications of integration. First and second order ordinary differential equations. Vectors in 2-space and 3-space, norm of a vector, dot product, cross product, lines and planes in 3-space. Euclidean n-space, vector operations; dot product, orthogonality, Cauchy-

Schwarz inequality. Linear transformation from  $R^n$  to  $R^m$ , standard matrices. Eigenvalues and eigenvectors. Student teachers will also be introduced to a Computer Algebra System (or CAS) and its applications in the topics discussed.

**AAI280 Improvisation**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

A practically-based course in the various musical and thought processes that underpin improvisation as a music-making activity with reference to a number of cultural contexts.

**AAI281 Movement Studies**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

Revolves around some of the practical possibilities of making the body respond to music.

**AAI282 Percussion**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

A practically-based course in percussion playing and developing skills on a range of instruments as well as in ensemble playing.

**AAI380 Studies in Indian Music**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

A practical based course on both North and South Indian classical music. The study involves developing instrumental skills in performing on the tablas, sitar and using Indian vocal techniques.

**AAI381 Studies in Japanese Music**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

Involves one or two traditional ensemble instruments, koto or shakuhachi. Largely a practical based course. Music activity will involve learning and developing skills in performing on the respective instruments as well as in ensemble playing.

**AAI382 Classical Guitar 1**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

Beginner's course in learning to play the classical guitar. Reading of basic notation and understanding and recognising chord symbols.

**AAI383 Choir I**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

Participation in the NIE Choir. Study of choral repertoire from all periods, concentration on vocal and choral techniques as related to musical styles, preparation and presentation of concerts.

**AAI384 Choir II**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

Further experience of the choral repertoire and of vocal techniques in the NIE Choir.

**AAI385 Voice**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

Fundamentals and techniques of singing. Study of the basic technique, repertoire and function of the vocal mechanism.

**AAI386 Recording**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

Basic acoustics and Engineering Theory. The process of recording. Differences in commonly-used recording techniques. The nature and operation of studio equipment. Recording live music. Assembling a domestic playback system. Exposure visits to various professional studios.

**AAI387 Band I**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

Rehearsing and performing in the symphonic band. The band provides performers with a wide range of repertoire.

**AAI388 Band II**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

Further participation in the symphonic band to perform the fine band literature, both original and transcribed, for the modern band, including premieres of new works.

**AAI389 Further Percussion**

AUs: 3, Prerequisites: AAI282, Semester 1 / 2

A further exploration and experience in percussion playing and developing skills on a range of percussion instruments as well as in ensemble playing.

**AAI390 Music Criticism and Writing**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

This course seeks to generate an environment of critical thinking and discourse about music and the ability to communicate these thoughts effectively to a wider public through print media and medium.

**AAI480 Studies in Chinese Music**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

The study of performance of Chinese flute in ensemble playing. Playing techniques and skill development. Ensemble playing with other Chinese musical instruments.

**AAI481 Studies in Malay Music**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

Learning and playing of the Malay framed drums, kompang and the Malay lute gambus. Performance techniques will involve acquiring skills in interlocking rhythmic variations and doing group performances.

**AAI482 Classical Guitar II**

AUs: 3, Prerequisites: AAI382, Semester 1 / 2

Advanced techniques in guitar performance will be taught. Development of a broadly based classical guitar repertoire.

**AAI483 Choir III**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

Further experience of the choral repertoire and of vocal techniques. Based on individual singing proficiency, trainee teachers may be assigned to participate in the NIE Choir or, the NIE Singers, an *a cappella* vocal ensemble which consists of a selective group of singers.

**AAI484 Choir IV**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

Further experience of the choral repertoire and of vocal techniques in the NIE Choir or the NIE Singers.

**AAI485 Studies in Pop & Jazz**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

A study of the development of popular music in the late 20<sup>th</sup> century from its European and Afro-American roots. This is largely a practical based course.

**AAI486 Music and Acoustics**



AUs: 3, Prerequisites: NIL, Semester 1 / 2

A musician's approach to acoustics as the science of sounds and deals with the aspects of perception, propagation and transmission of sound as well as an exploration of acoustics of musical instruments.

**AAI487 Band III**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

Continued experience in the symphonic band. To perform literature of the highest aesthetic value with emphasis on major original works.

**AAI488 Band IV**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

Advanced experience in performing the band literature which requires individual musicianship and advanced playing techniques.

**AAI489 Advanced Conducting**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

Development of knowledge and skills at a professional level; various periods and composers and relationship of different styles to the conductor's art; musical analysis and practice in conducting.

**AAI490 Shakuhachi Ensemble**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

An exploration of the practical-based approach to the shakuhachi in both individual and ensemble playing based on repertoire of both traditional and popular genres.

**AGE180 Environmental Science**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

Provides a comprehensive introduction to a complex interdisciplinary field. To provide student teachers with sufficient background and information to think about how to approach the environment and the hazards posed rather than just provide simple "cookbook" solutions.

**AGE181 Appreciation and Identification of Gemstones**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

With gemstones as the theme, student teachers will be able to learn (a) chemistry: elements and compounds, chemical compositions, and crystal structure; (b) physics: density, hardness, toughness, weights, reflection and refraction of light, dispersion of light; and luminescence; (c) biology: studies on organic gemstones such as amber from plants, ivory and pearls from animals; (d) aesthetics and fashion: cutting patterns of gemstones, selecting the gemstone for the occasion; (e) geology: origin of gemstones, mineral deposits, mining methods; (f) geography: distribution of gemstones; and (g) science education: knowledge in properties of gemstones can be used to teach basic concepts in science such as chemical compositions, and optics in primary or secondary school levels. Furthermore, for personal development, the student teachers will be more aware of imitations and synthetic gemstones when they wish to purchase one. They will also learn to appreciate the diversity and usefulness of gemstones in homes, and industries.

**AGE183 Human Diversity**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

Questions on human origin and diversification. Prevailing theories of where humans came from and why humans have been so successful as a species. Diverse range of methodologies such as archaeology, linguistics, paleontology, and genetics will be highlighted in this multi-disciplinary field.

**AGE184 The Living World**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

Teaching life science by telling its story. Approach taken is one of progression: - the origin of life, from single cell to multicellular organism, from continuity of life to the diversity of life. Energy and life processes of cells - growth, movement and transport of molecules across membranes, and in photosynthesis. The later part of this course will tell you a story how green cells capture energy from sunlight to make chemical energy, how the living cell including your body cells use the chemical energy to power their lives.

**AGE185 Food Biotechnology**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

Uses of micro-organisms in producing and modifying food. Food fermentation and enzyme technologies in: dairy industry (cultured milk products, yoghurt), juice and alcohol production (wine, beer), baking industry, vegetable- (olive, kimchi, tempeh) and meat-processing (sausages, salami) plants. Genetically modified organisms (GMOs) in

food. Monitoring food safety. Recent advances in miniaturisation, automation and molecular methods for rapid detection of pathogenic and genetically modified organisms in food.

#### **AGE186 Conservation and Management of Natural Habitats**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

Natural areas and the means by which they can be best preserved and managed. The conflicting demands between development and economic growth on one hand and conservation on the other. The management of natural areas -- such as mangrove swamps, primary and secondary forests and rocky shorelines -- and the dilemmas for policy makers to maintain a balance between ecosystem, recreation, and economic needs. Singapore, as an excellent case study, where these issues have been considered and resolved through, sometimes, difficult decisions.

#### **AGE187 Economic Botany**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

Economically important plants and the dependence of man on plants. Plants of actual and potential uses as food, medicine, fibre and timber. Traditional ways of using and managing plants, plants as renewable resources, current trends in bioprospecting for novel plant products of pharmaceutical and industrial value.

#### **AGE188 Life Sciences and Man**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

The success of biological science breakthroughs and its impact on man. Focus is broad based, covering areas such as antibiotics, the green revolution and the latest in the world of molecular and DNA technologies and its implications on man's future.

#### **AGE189 Animal Behaviour**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

Why do bees dance? Why do some birds lay eggs in another birds' nest? Infanticide, siblicide, suicidal reproduction, total defence of a piece of real estate, the territory-- which sex drives this behaviour, what are the costs and benefits of these behaviours? How do animals pilot or navigate from one place to another? How do chimpanzees design tools and megatools? How are some behaviours learned? What is the size-maximization principle? Is behaviour adaptive? How do we explain animal behaviours? How do ethologists study animal behavior? How can we observe or design some lab and field experiments to study animal behaviour?

#### **AGE190 Life in the Marine Environment**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

The ocean as habitat; classification of the marine environment. Adaptations of marine life. Intertidal shore communities and soft-bottom communities. Estuaries, continental shelf and coral reefs as ecosystems. Economic uses of estuaries. Living in the epipelagic, the nature of the epipelagic food webs. Life in the abyss and deep-sea hot springs. Resources from the sea.

#### **AGE191 Life Sciences: From Genes to Genomes**

AUs: 2, Prerequisites: NIL, Semester 1 / 2

A general course for degree student teachers to introduce them to some basic concepts and current issues in the life sciences. Topics for the course include: What is life sciences all about & why should we care? Plagues, bird flus, and mad cows, human diseases; plant diseases; basic cell biology; plant breeding & the green revolution; the chemistry of life; genes and molecular genetics; sex, clones and generically modifies organisms; recombinant DNA Technology; social and ethical concerns of GMOs and impact of GMOs on the managing "radical" developments in the life sciences); gene therapy, molecular medicines; modern "pharming", biotechnology applications, and transgenic animals; industrial plants; plants as factories); the growing of pest resistant crops in developed & developing counties); life sciences Inc., life science research & business opportunities.

#### **AGE195 Chemistry for Life Sciences**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

This course provides the fundamental chemical knowledge essential for understanding and appreciation of the life sciences. It is organized into three main sections: General and Biophysical Chemistry (building blocks of life, oxidation and reduction, chemical equilibria, buffers, pH, concepts of energy). Organic Chemistry (structure and classification, functional groups, selected classes of biologically important organic compounds). Biomolecules and Biopolymers (fats and oils, steroids, vitamins, sugars; naturally occurring polymers). Most of the topics will be illustrated with relevant examples from biological systems.

#### **APA180 Health and Fitness**

AUs: 3, Prerequisites: Non-PE student teachers, Semester 1 / 2

Basic scientific knowledge about one's body and the use of this information and understanding to improve health and wellness through exercise, diet and stress management techniques.

**APA280 Weight Training**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

Weight (resistance) training techniques, terminology, and methods. Safety procedures related to the use of both fixed equipment and free weights. The principles of specificity, overload, and adaptation in relation to strength training, endurance training, power training, and circuit training. Basic physiology is introduced.

**APA281 Aerobics**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

Teaching aerobics classes in school. Utilising fitness principles from the 'Fitness and Conditioning' course and adapting them to an aerobics setting. Instruction in low and high impact activity and insights into class flow and choreographing a routine. Resistance training. Construction and organisation of routines in a workshop setting.

**AGE182 An Introduction to Indian Culture and Customs**

AUs: 3, Prerequisites: NIL, Semester 1 / 2

Geographical and Social Developments. Historical Perspectives of India. Language and Literature Developments. Indian Arts. Indian Beliefs, Culture and Customs (Traditions and Philosophy). Folklore and Scientific Thoughts. Indian Lifestyles. Tamils and Indians groups in Singapore.