

PROFESSIONAL LEARNING CATALOGUE

JANUARY TO JUNE 2016

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PROFESSIONAL LEARNING AT NIE

NIE believes in lifelong learning. In alignment with NIE's mission to excel in Teacher Education, the range of professional development programmes and courses offered by NIE to meet the needs of our various stakeholders is instrumental in enabling the fulfilment of this mission. In addition, one main feature of NIE's Teacher Education Model of the 21st Century is the consideration of teachers' needs on an enhanced pathway of professional learning (PL). We believe our professional learning programmes for teachers are instrumental in meeting teachers' aspirations.

Our programmes are tailored to the learning needs of school teachers as well as educators and professionals working in various educational settings. In particular, we have six focus areas in our programmes and courses to:

1. Upgrade content knowledge of teachers;
2. Update teachers with pedagogical innovations in subject teaching;
3. Equip teachers with new competencies in response to societal needs and demands;
4. Keep teachers abreast of new developments and initiatives in education;
5. educate teachers with research and management skills; and
6. enhance their teaching effectiveness through life-long learning.

These areas of focus will enable our teachers to advance and master the set of Teacher Competencies they have attained since their graduation from their initial teacher preparation programmes. In addition, these programmes are also designed with the MOE Teacher Growth Model (TGM) in mind, providing learning opportunities for the ethical educator, the competent professional, the collaborative learner, the transformational leader and the community builder. We continue to provide quality teaching and learning to enable our teachers in their learning journeys through three key modes of PL.

Certification Programmes

NIE offers a suite of Certificates, Diplomas, and Advanced Diplomas that cater to the range of professional needs of Singapore educators. These structured programmes are grounded in continuing, life-long learning principles to meet the career needs of practising teachers and educational professionals in a changing education sector.

Stand-alone Professional Learning Courses

Apart from Certification programmes, NIE offers two categories of stand-alone PL courses. These can be generic in-service courses designed in response to contemporary policy, curriculum and pedagogy that are relevant to teachers' aspirations and the mission of MOE. Another type of stand-alone course is the in-service course taught at a graduate level that provides learning experiences to teachers. This is done on a 'modular' basis to enable them to learn at their own pace, without first having to register for a master's programme. This enables teachers to accumulate academic credits for consideration of admission to higher certification programmes.

Customised Workshops

In addressing the needs of our stakeholders, NIE often responds to requests from educators to run customised workshops. In order to provide to prospective educators who require customised training, we have included a section on the areas of learning for customised school-based workshop in this catalogue.

In short, NIE is committed to providing relevant, responsive, rigour-tested, practice-proven, evidence-informed and technology-mediated knowledge solutions and innovations in educational policy, process and practice to meet organisations' and individuals' professional needs.

CERTIFICATION PROGRAMMES

Certificates

Certificate in Special Needs Support

This programme serves to provide mainstream teachers in the primary and secondary schools with more in-depth knowledge, skills and understanding of the special needs of diverse learners and foster the development of teachers' education.

Certificate in Educational Support

This programme aims to deepen the professional knowledge and skills of participants in relation to (a) supporting the specific socio-emotional needs of the low progress learners, and (b) supporting the specific learning needs of the low progress learners. It is designed to meet the key learning areas in the Professional Development Roadmap for Secondary School Teachers - Teaching Low Progress Learners, namely: "characteristics of low progress learners and social-emotional learning/TSR strategies", "motivation and education and career guidance" and "pedagogical practices".

Certificate in Primary English Language Education

This programme aims to level up the English Language (EL) teachers' subject content knowledge and pedagogical skills, which are essential for an EL specialist at the upper primary, particularly with emphasis on developing the teachers' understanding and competence in teaching the six language skills of reading, writing, speaking, listening, viewing and representing. Each course will also examine the related assessment practices based on the subject matter knowledge of the topic.

Certificate in Primary Mathematics Education

This programme aims to prepare the teachers for specializing in primary mathematics teaching at the upper primary level, with emphasis on the topics that are taught in the primary mathematics curriculum. Each course will also examine the related assessment practices based on the subject matter knowledge of the topic.

Certificate in Primary Science Education

This programme aims to equip teachers with knowledge and understanding of biological and physical Science topics, and how the topics are connected to each other. In addition, the courses will equip teachers with the knowledge and skills in planning and implementing holistic assessment in Primary Science.

Diplomas

Diploma in Educational Psychology

This programme is intended as an initial in-service training to prepare the Associate Psychologists (A/Psys) for their role in MOE. Upon completion of the programme, A/Psys are expected to be able to develop and implement appropriate school-based assessments to evaluate pupils' progress, vis-a-vis educational, social and learning outcomes. They will design and implement intervention programmes to meet students' learning, social-emotional, and behavioural needs. In consultation with Educational Psychologists, they will conduct assessments of children's special educational needs, and provide advice to schools on strategies to support children's special educational needs.

Diploma in Physical Education (In-service)

This programme seeks to develop professional competence and expertise in teaching Physical Education as a major subject. It seeks to enable teachers to follow an academic and knowledge-based approach to the subject area of Physical Education. The programme aims to give teachers a grasp of the physical, psychological, sociological and philosophical principles essential to an understanding of the physical education teaching process.

Advanced Diplomas

Advanced Diploma in Malay Language Education

This programme seeks to enhance knowledge in Malay language and literature, which will help educators to communicate more effectively with students. Participants will also acquire greater knowledge and practical skills in setting papers, marking and correcting pupils' compositions. Participants will be equipped with practical communicative skills to relate better to pupils, colleagues and parents. Participants will also keep abreast of the latest developments of Malay pedagogy in the Malay world or South East Asia and learn to be more resourceful as Malay language teachers and understand and appreciate Malay literature & culture and history.

Advanced Diploma in Primary Art Education

This programme provides teachers with a framework of knowledge and skills in art. It also provides perspectives on the change and development of theories and trends in art and art education for teachers to reflect, re-examine and to draw inferences about their classroom practices. Lastly, it enables teachers to develop competencies in the evaluation and planning of effective art curriculum and programme in their schools.

Advanced Diploma in Primary English Language Education

This programme provides teachers with a framework of knowledge and skills in teaching primary English language. It also provides perspectives on the change and development in the primary English language curriculum for teachers to reflect, re-examine, and refine their classroom practices. Lastly, it enables teachers to develop competencies in the design and practice of assessment and evaluation.

Advanced Diploma in Primary Mathematics Education

This programme provides teachers with a framework of knowledge and skills in the teaching of primary Mathematics. It also provides perspectives on the change and development in primary Mathematics curriculum for teachers to reflect re-examine and refine their classroom practices. Lastly, it enables teachers to develop competencies in the design and practice of assessment and evaluation.

Advanced Diploma in Primary Music Education

This programme provides teachers with a framework of knowledge and skills in music. It apprises music teachers of the current thinking and practice in Music and Music Education and provides opportunities for teachers to reflect on and re-examine their classroom practices. Lastly, it enables teachers to develop competencies in the evaluation and planning of effective music curricula and programmes in their own schools.

Advanced Diploma in Primary Science Education

This programme provides teachers with a framework of knowledge and skills in the teaching of primary Science. It also provides perspectives on the changes and developments in the primary Science curriculum for teachers to reflect, re-examine and refine their classroom practices. Lastly, it enables teachers to develop competencies in the design and practice of assessment and evaluation.

Advanced Diploma in Special Learning and Behavioural Needs

This programme provides a framework of knowledge and skills and inculcates attitudes which are important to the education of students with special needs. It also examines the range of factors that facilitates or hinders the learning of a student with special needs in mainstream schools; thus enabling teachers to develop competencies in assessing, planning, implementing, and evaluating programmes for students with special needs. Lastly, the programme provides teachers with the basic knowledge and skills for supporting students with various types of disabilities.

Advanced Diploma in Teaching Early Primary School Years

Closely coordinated with various MOE initiatives, this programme seeks to develop professional competence and expertise in teaching lower primary children. It will help teachers understand how children learn and develop; and thus create a learning environment that keeps children safe as well as support engaging activities that promote quality learning. Teachers will develop effective and age-appropriate strategies to promote children's learning; understand goals, benefits and uses of systematic observations and varied forms of assessment to impact the development of children. They will learn to understand strategies of family and community engagement to promote positive learning outcomes for children, deepen their understanding of how children's language skills and numeracy develop in the lower primary and develop engaging teaching and learning activities to foster these skills. Lastly, they will broaden their leadership potential and expand their professional confidence and impact as teacher leaders.

Advanced Diploma in Special Education

This programme focuses on enhancing the capacities, skills and practices of the Allied Educators (Learning and Behavioural Support) and Special School Teachers using a "reflective-practitioner" and "learning-based" approach to develop appropriate classroom-based and school-level supports for pupils with special needs in mainstream or special schools.

Advanced Diploma in Teaching

The purpose of this Advanced Diploma in Teaching is to offer the opportunity to customize your own learning, based on your instructional needs and interests in different schools; and across at least two subject areas within the primary school curriculum. It also offers a greater scope of elective courses otherwise unavailable within disciplinary Advanced Diplomas.

STAND-ALONE PROFESSIONAL LEARNING COURSES OFFERED IN JAN – JUN 2016

GRADUATE LEVEL COURSES

IME6012 Curriculum Studies in Mathematics

Duration : 39 hours

Date : 11 January to 8 April 2016 (Mondays)

Time : 6.00pm to 9.00pm

Trainer : Assistant Professor Lee Ngan Hoe

Course fees for MOE participants : \$418.30 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$2,504.80 (includes 7% GST and \$1 copyright fee)

Target audience : All Graduate Teachers

This course comprises exploring number theory and its applications. The topics that comprise this course are Fibonacci, Lucas; Euclidean algorithm, greatest common divisor, the fundamental theorem of arithmetic, least common multiple, Pythagorean triples, linear diophantine equations; infinitude of primes, distribution of primes, special primes (Twin, Mersenne, Fermat); fundamental properties, special divisibility criteria, Euler's theorem, Fermat's little theorem, linear congruences, Chinese remainder theorem, quadratic congruences; cryptography - Caesar ciphers, exponentiation ciphers and public key encryption systems.

IME6011 Fundamental Concepts in Mathematics

Duration : 39 hours

Date : 11 January to 8 April 2016 (Mondays)

Time : 6.00pm to 9.00pm

Trainer : Dr Paul Shutler

Course fees for MOE participants : \$418.30 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$2,504.80 (includes 7% GST and \$1 copyright fee)

Target audience : All Graduate Teachers

The mathematics which we enjoy in the present is the end product of a very long past evolution, which doubtlessly will continue to evolve far into the future. The main aim of this course is to broaden your focus to include both the distant past and the far future, to help you appreciate that even in a subject as precise as mathematics truth does evolve, and to make you more open to the possibilities which exist to improve the mathematics we actually have. A historical perspective is especially important from the point of view of mathematics education, since the school curriculum runs almost exactly in parallel with the historical development of the subject, and even the most "elementary" of mathematical concepts was at one time cutting edge research. The other aim of this course is to help you become a better teacher of the subject, and an agent of change in your own classroom.

This course can be accredited towards the Master of Education (Mathematics) programme.

IME6013 Statistics and the Teaching of Statistics

Duration: 39 hours

Date: 11 January to 8 April 2016 (Wednesdays)

Time: 6.00pm to 9.00pm

Trainer: Dr Joseph Yeo Boon Wooi

Course fees for MOE participants: \$418.30 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants: \$2,504.80 (includes 7% GST and \$1 copyright fee)

Target audience: All Graduate Teachers

This course is designed to look at the research in statistics education with the focus on the implications of that research for teaching statistics. This has been done through a focus on misconceptions (which, implicitly, implies looking at conceptualisation). Many of the misconceptions exist among people at all levels, from primary school through to adults. Many of the topics span issues from different levels. While some of the topics may appear on the surface to be primary, students in secondary school as well as adults have some of these misconceptions, so the issues are appropriate at different levels.

This course can be accredited towards the Master of Education (Mathematics) programme.

IME6005 Discrete Mathematics and Problem Solving

Duration: 39 hours

Date: 11 January to 8 April 2016 (Thursdays)

Time: 6.00pm to 9.00pm

Trainer: Associate Professor Tay Eng Guan

Course fees for MOE participants: \$418.30 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants: \$2,504.80 (includes 7% GST and \$1 copyright fee)

Target audience: All Graduate Teachers

This course will enable the student to learn about problem solving and the teaching of problem solving through personal experience in problem solving. This is to be achieved in the context of Combinatorics and Graph Theory. Students will also actively learn to use a problem solving model.

This course can be accredited towards the Master of Science (Mathematics for Educators) or Master of Education (Mathematics) programme.

INS6037 Fundamentals and Applications of Materials Science

Duration: 39 hours

Date: 11 January to 15 April 2016 (Fridays)

Time: 6.30pm to 9.30pm

Trainer: Assistant Professor Wong Ka Lun

Course fees for MOE participants: \$626.95 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants: \$2,713.45 (includes 7% GST and \$1 copyright fee)

Target audience: All Graduate Secondary School and Junior College Teachers

Materials chemistry comprises the application of comprehensive knowledge of different chemical disciplines to the design, synthesis, characterisation, processing, understanding, and utilisation of materials. This course emphasises the fundamental knowledge on chemical synthesis of materials, and the physiochemical properties of materials. Related characterisation methods and structure-property relationships will also be discussed. The latest development in this field will also be highlighted.

This course can be accredited towards the Master of Science (Mathematics for Educators) or Master of Education (Mathematics) programme.

IVP6005 Contextualizing Drama Education

Duration : 39 hours

Date : 11 January to 15 April 2016 (Mondays)

Time : 6.00pm to 9.00pm

Trainer : Assistant Professor Prudence Wales

Course fees for MOE participants : \$418.30 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$2,504.80 (includes 7% GST and \$1 copyright fee)

Target audience : All Graduate Teachers

This in-service module invites participants into an exploration of drama as a way of learning and knowing. Participants will investigate applications of drama in a range of pedagogical contexts. They will trace developments in drama education and critically reflect upon the underlying historical, political, social and educational motivations and agendas for developments in the field. Through discussions and practical workshops participants will consider the multiple levels of learning that drama can provide and experience how learning can take place in and through the medium of drama while students learn about the art form.

This course can be accredited towards the Master of Education (Drama) programme.

IN-SERVICE COURSES

■ Curriculum, Teaching and Learning

ICT0417 Design Thinking: Tools and Methods

(TRAISI Code: 71034)

Duration : 14 hours

Date : 14 and 15 March 2016 (1st run)
27 and 28 June 2016 (2nd run)

Time : 9.00am to 5.00pm

Trainer : Mr Wong Yew Leong

Course fees for MOE participants : \$150.80 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$899.80 (includes 7% GST and \$1 copyright fee)

Target audience : All Educators

This course introduces participants to the concept of design thinking, as well as a basic set of design thinking tools and processes. Participants will learn by working in groups of 4-5, participants will immediately put into practice the tools and processes they have learned as they attempt to create innovative solutions to solve a real-world human problem. They will interact with people who experience the problem on a daily basis to acquire a deep understanding of their needs and challenges and will develop and refine their solutions on the basis of feedback from their fellow learners and guests. The course ends with an exploration of possible ways of applying design thinking tools and processes in Singapore schools.

ICT0313 Designing Quality Alternative Assessment (TRAISI Code: 50803)

Duration : 10 hours

Date : 14 and 28 March 2016

Time : 9.00am to 5.00pm (14 March) and
2.30pm to 5.30pm (28 March)

Trainer : Dr Tay Hui Yong

Course fees for MOE participants : \$108.00 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$643.00 (includes 7% GST and \$1 copyright fee)

Target audience : All Educators

This course is intended to increase participants' knowledge and skills about alternative assessment concepts and connections to curricular aims. It gives participants experience in developing or adapting alternative assessment tasks for use in schools. Participants will practise evaluating potential alternative assessment tasks for newly-emerging curricular goals (e.g., 21st century skills, citizenship education and ICT).

ICT0314 Self-assessment: Students as self-regulated learners (TRAISI Code: 12398)

Duration : 10 hours

Date : 15 and 29 March 2016

Time : 9.00am to 5.00pm (15 March) and
2.30pm to 5.30pm (29 March)

Trainer : Dr Tay Hui Yong

Course fees for MOE participants : \$108.00 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$643.00 (includes 7% GST and \$1 copyright fee)

Target audience : All Educators

This course is intended to increase participants' understanding of two key concepts: Self-regulated Learning and Student Self-assessment; and more importantly, the relationship between the two. Participants will have opportunities to craft and critique classroom activities that will help promote student self-assessment and ultimately self-regulated learning.

ICT0413 Engaging Pedagogies (TRAISI Code: 12378)

Duration : 10 hours

Date : 15 March and 15 April 2016

Time : 9.00am to 5.00pm (15 March) and
2.30pm to 5.30pm (15 April)

Trainer : Dr Heng Tang Tang

Course fees for MOE participants : \$108.00 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$643.00 (includes 7% GST and \$1 copyright fee)

Target audience : All Educators

This course examines the narrow definition of pedagogy, i.e., the art and science of teaching (or lesson delivery method), and what it takes to engage learners. Fundamental to the concept of engaging pedagogies is the question: What are your learning objectives? Participants will understand that engaging pedagogies are only means to an end. Clear goals are necessary in selecting the most appropriate pedagogy to support student engagement during learning.

ICT0320 Effective Questioning & Feedback as Formative Assessment Strategy

Duration : 10 hours

Date : 22 March and 27 April 2016

Time : 9.00am to 5.00pm (22 March) and
2:30pm to 5:30pm (27 April)

Trainer : Assistant Professor Chris Deneen

Course fees for MOE participants : \$108.00 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$643.00 (includes 7% GST and \$1 copyright fee)

Target audience : All Educators

The course is designed to build teachers' capacity in the areas of questioning and feedback, two important assessment for learning (AfL) strategies. Using research-informed best practices, participants explore and apply questioning and feedback within authentic contexts. Focusing on enhancing teachers' use of AfL strategies, the course examines how participants may plan the conditions for ideal questioning and feedback practices. Through discussion, hands-on and reflective activities, participants will enhance their knowledge and skills to use Q&F strategies to support and evaluate teaching and learning. AfL practices and understandings will be set within the context of MOE Assessment Philosophy and assessment competencies.

ICT0306 Assessment and Learning

(TRAISI Code: 50622)

Duration : 10 hours

Date : 23 March and 30 March 2016 (1st run)

29 June and 13 July 2016 (2nd run)

Time : 9.00am to 5.00pm (1st run)

2.30pm to 5.30pm (2nd run)

Trainer : Assistant Professor Leong Wei Shin

Course fees for MOE participants : \$108.00 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$643.00 (includes 7% GST and \$1 copyright fee)

Target audience : All Educators

The course is designed for teachers who already have some knowledge and/or tried out formative assessment (or Assessment for Learning) strategies in their classrooms. The focus of this course is on helping teachers to support other teachers' works in classroom assessment, bearing in mind that quality assessment practices involve not just being able to attend to either formative or summative assessment exclusively. Also, classroom assessment may be very different for different subject teachers and profile of students.

ICT0312 Assessment Leadership in Schools - Policy and Practice

(TRAISI Code: 50669)

Duration : 12 hours

Date : 19 and 26 April 2016

Time : 9.00am to 4.00pm

Trainers : Associate Professor Kelvin Tan and Dr Tay Hui Yong

Course fees for MOE participants : \$129.40 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$771.40 (includes 7% GST and \$1 copyright fee)

Target audience : Secondary School / Junior College Teachers

By the end of the course, participants should be able to have conceptual clarity in the distinction and relationship between assessment of and for learning. They will also understand the conditions for, and essential elements of, feedback practice in schools and classrooms; and use rubrics to anticipate, articulate and accentuate academic standards in schools. Lastly, they will learn to appreciate the role and complexities of leadership in guiding and enhancing formative assessment practices in schools.

■ Design and Technology

INS5138 Issues in Secondary School D&T Education (TRAISI Code: 80053)

Duration : 36 Hours

Date : 10, 17, 24 February, 2, 9, 23, 30 March,
6, 13, 20, 27 April and 4 May 2016

Time : 2.30pm to 5.30pm

Trainer : Mr Jason Tan

Course fees for MOE participants : \$386.20 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$2,312.20 (includes 7% GST and \$1 copyright fee)

Target audience : Secondary School Teachers

Participants will be able to explore and define educational values, attitudes and ethics in the teaching and learning of design and technology. They will also identify and examine concerns and issues in the teaching and learning of design and technology in the school context and beyond; and define philosophical framework for the teaching and learning of design and technology.

INS2098 Idea Conceptualisation through Idea Growing (TRAISI Code: 80126)

Duration : 16 hours

Date : 22 and 23 February 2016

Time : 8.30am to 5.30pm

Trainer : Mr Jason Tan

Course fees for MOE participants : \$172.20 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$1,028.20 (includes 7% GST and \$1 copyright fee)

Target audience : Secondary School Teachers

Participants will be able to articulate the main focus of secondary school Design & Technology education. They will focus on the use of Tablet PC to appreciate the extent of key dimensions involved in sketching and doodling and conceptualising design ideas through idea growing. Lastly, participants can use research and ideation techniques meaningfully to scaffold idea growing and to work towards a resolved solution.

INS5129 Drawing Skills – Understanding the Basics (TRAISI Code: 80059)

Duration : 24 hours

Date : 29 February, 7, 21, 28 March, 4, 11, 18 and
25 April 2016

Time : 2.30pm to 5.30pm

Trainer : Mr Jason Tan

Course fees for MOE participants : \$257.80 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$1541.80 (includes 7% GST and \$1 copyright fee)

Target audience : Secondary School / Junior College Teachers

Participants will be able to explain the basic perceptual skills of drawing and drawing still life objects and products with confidence. They can observe and describe details of the chosen object/product and analyse it in terms of design detail, and the use of drawing and sketching to aid visualisation in problem-solving activities.

INS2102 Supporting D&T Teachers in Facilitating Pupils' Application of Structure, Mechanisms and Electronics

(TRAISI Code: MOE393)

Duration : 24 Hours

Date : 3, 10, 24, 31 March,
7, 14, 21 and 28 April 2016

Time : 2.30pm to 5.30pm

Trainer : Mr Jason Tan

Course fees for MOE participants : \$386.20 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$1,670.20 (includes 7% GST and \$1 copyright fee)

Target audience : Secondary School Teachers

The course aims to provide with and develop in Education Workshop Instructors the basic knowledge and application skills to facilitate and apply electronics, mechanisms and structures to support pupils' Design & Technology project work. Participants will have practical knowledge to improvise and implement technological applications within the context of D&T pupils' project work and disposition to think and analyse technology related applications in pupils' design work.

INS2093 Managing Resources in D&T Studio

(TRAISI Code: MOE371)

Duration : 18 hours

Date : 22, 29 March,
5, 12, 19 and 26 April 2016

Time : 2.30pm to 5.30pm

Trainer : To be advised

Course fees for MOE participants : \$289.90 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$1,252.90 (includes 7% GST and \$1 copyright fee)

Target audience : Secondary School Teachers

Participants will be able to evaluate and identify the need for developing a sustainable way of managing resources. They will organise and manage resources with consideration for economic, environment and ergonomics factors. They will work with the teachers to create a teaching and learning environment conducive to pupil's designing activities.

INS2124 Sketching & Designing in EWIs – Understanding the Basics

(TRAISI Code: MOE453)

Duration : 24 hours

Date : 1, 8, 15, 22, 29 April,
6, 13 and 20 May 2016

Time : 2.00pm to 5.00pm

Trainer : Mr Jason Tan

Course fees for MOE participants : \$257.80 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$1,541.80 (includes 7% GST and \$1 copyright fee)

Target audience : Secondary School Teachers

Participants will practice sketching on still life objects and products using basic perceptual skills of sketching: copy, size and scale, GPO, overlapping, detail, contour, edge, shade/shadow, texture, shape/form, perspective and 2D/3D sketch elements. They will understand crating as foundational framing for object/product sketching. Participants will also use objective sketching and descriptive sketching as techniques for product analysis. Lastly, they will understand the basics of using tablet pc and sketching software to sketch designs.

INS0035 D&T Studio Safety in Secondary Schools

(TRAISI Code: MOE360)

Duration : 18 Hours

Date : 4, 11, 18, 25 April,
9 and 16 May 2016

Time : 2.30pm to 5.30pm

Trainer : To be advised

Course fees for MOE participants : \$289.90 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$1,252.90 (includes 7% GST and \$1 copyright fee)

Target audience : Secondary School Teachers

Participants will be able to generate a comprehensive list of workshop safety procedures and regulations to guide safe practices in a Design & Technology (D&T) workshop; in order to organise and manage a safe D&T working environment for pupils. The course will support D&T teachers in cultivating safe working habits amongst D&T pupils in working with related materials and equipment.

INS2115 Teacher-Pupil Coach Designer

(TRAISI Code: 80328)

Duration : 80 hours

Date : 3, 4, 5, 6, 9, 10, 11, 12, 13 and 16 May 2016

Time : 8.30am to 5.30pm

Trainer : Mr Jason Tan

Course fees for MOE participants : \$1285.00 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$5,565.00 (includes 7% GST and \$1 copyright fee)

Target audience : Secondary School Teachers

The course aims to equip Design & Technology teacher with an in-depth understanding and practice of what it means to be designing in the context of secondary-school-level-pupil designing, while having the tacit of know-how of a teacher-designer in-action. The course will also show what it takes to practise teacher-pupil co-designing and the philosophical underpinning of Design & Technology education as general education for 13 to 16 year olds.

■ Early Childhood and Special Needs

IEC0014 Engaging Parents: A Practical Approach (for Beginning Teachers)

(TRAISI Code: 70450)

Duration : 12 hours

Date : 15 and 16 February 2016 (1st Run)
2 and 3 March 2016 (2nd Run)
14 and 15 March 2016 (3rd Run)
20 and 21 June 2016 (4th run)

Time : 9.00am to 5.00pm

Trainer : Faculty from the Early Childhood and Special Needs Education Academic Group

Course fees for MOE participants : \$129.40 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$771.40 (includes 7% GST and \$1 copyright fee)

Target audience : All Educators

Positive interactions and positive relationships with parents and other community members can improve student performance, increase parent and volunteer involvement in schools, decrease student truancy, and increase student health (Chrispeels, 2006; McMahon, Browning, Rose-Colly, 2001; MOE, 2012; Bosma, et. al, 2010). This course focuses on the strategies, resources, and tools that will help educators build healthy relationships with parents and other community members.

IEC4019 Engaging Students with Special Needs in Mainstream Classrooms (TRAISI Code: 73252)

Duration : 12 hours

Date : 22 and 23 February 2016 (1st run)
24 and 25 May 2016 (2nd Run)

Time : 8.30am to 5.00pm

Trainer : Mdm Sarinajit Kaur

Course fees for MOE participants : \$129.40 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$771.40 (includes 7% GST and \$1 copyright fee)

Target audience : All Educators

This course seeks to equip teachers with an introduction to the context of special needs education in Singapore as well as an understanding of the attitudes and perceptions of stakeholders in this process. Participants will be introduced to a framework for supporting pupils with special needs in their classrooms; drawing on strengths within the classroom context and incorporating other resources within the school and community. This would include existing systems within current school contexts such as The Systemic Model for Support and Case Management Teams. In addition, course participants will also be introduced to the ecological framework and a systematic approach for intervention involving assessment, planning, implementation and evaluation (APIE). This course will provide a foundation for building supportive partnerships with families of pupils with special needs.

IEC4021 Physical and Sensory Disabilities

Duration : 36 hours

Date : 24, 25 and 26 February 2016

Time : 8.30am to 5.00pm

Trainer : Assistant Professor Wong Meng Ee

Course fees for MOE participants : \$386.20 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$2,312.20 (includes 7% GST and \$1 copyright fee)

Target audience : All Educators

This course provides an overview of how to support children and youth with physical and sensory difficulties in the classroom. The definitions, characteristics and challenges of learners with physical and sensory difficulties will be examined through the use of case studies and the opportunity to apply theory to practice. This is in light of deriving practical and pragmatic strategies to address challenges faced by both the student and teacher in local mainstream schools in a holistic and systematic fashion, participants will employ frameworks introduced in earlier course(s) such as the ecological framework and the APIE within one's school context.

IEC1022 Further Professional Development for Learning Support for Mathematics (LSM) Teachers

Duration : 24 hours

Date : 25 February, 10, 31 March, 14, 28 April,
26 May and 22 September 2016

Time : 2.30pm to 5.30pm

Trainer : Mr Vincent Yeo

Course fees for MOE participants : \$257.80 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$1,541.80 (includes 7% GST and \$1 copyright fee)

Target audience : All Educators

This course will equip LSM teachers with pedagogical skills in assessment, planning and implementation for teaching mathematics to pupils with diverse needs.

IEC4020 Attention Deficit Hyperactivity Disorder: Characteristics and Classroom Intervention (TRAISI Code: 73254)

Duration : 36 hours

Date : 3, 4 and 31 March 2016

Time : 8.30am to 5.00pm

Trainer : Assistant Professor Zachary Walker

Course fees for MOE participants : \$386.20 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$2,312.20 (includes 7% GST and \$1 copyright fee)

Target audience : All Educators

This course provides an overview of how to support children and youth with Attention Deficit/Hyperactivity Disorder (ADHD) in the classroom. The definitions, characteristics and challenges of learners with ADHD will be examined through the use of case studies and the opportunity to apply theory to practice. This is in light of deriving practical and pragmatic strategies to address challenges faced by both the student and teacher in local mainstream schools in a holistic and systematic fashion; while employing frameworks introduced in earlier course(s) such as the ecological framework and the APIE within one's school context.

IEC4004 Autism Spectrum Disorders: Characteristics and Classroom Intervention (TRAISI Code: 73261)

Duration : 36 hours

Date : 8, 9 and 10 March 2016 (1st run)

30, 31 May and 1 June 2016 (2nd run)

Time : 8.30am to 5.00pm

Trainer : Mr Norman Kee

Course fees for MOE participants : \$386.20 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$2,312.20 (includes 7% GST and \$1 copyright fee)

Target audience : All Educators

This course provides an overview of Autism Spectrum Disorders (ASD), with a primary focus on students with high functioning autism and Asperger's syndrome. The definitions and characteristics of learners with ASD will be examined in the light of planning intervention programmes. The participants will also learn strategies for supporting these learners in local mainstream schools.

IEC4003 Learning Disabilities: Characteristics and Classroom Intervention (TRAISI Code: 73259)

Duration : 36 hours

Date : 14, 15 March, 8 April 2016

Time : 8.30am to 5.00pm

Trainer : Associate Professor Noel Chia

Course fees for MOE participants : \$386.20 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$2,312.20 (includes 7% GST and \$1 copyright fee)

Target audience : All Educators

This course provides an overview of the characteristics and prevalence of learning disabilities, as well as the challenges faced by students with learning disabilities. Educational approaches, including learning strategies and social skills development for these students will be examined.

■ Geography

IHS2202 NIE Workshop on Geographical Inquiry for A-level Geography (TRAISI Code: 21682)

Duration : 8 hours

Date : 1 and 2 February 2016 (1st run)
4 and 5 February 2016 (2nd run)

Time : 8:30am to 5:30pm

Trainer : Dr Tricia Seow

Course fees for MOE participants : \$172.20 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$1,028.20 (includes 7% GST and \$1 copyright fee)

Target audience : Junior College Teachers

This course provides A-level geography teachers with the knowledge and skills needed to implement the new A-level geography syllabus using the geographical inquiry approach. At the end of the course, participants will develop familiarity with the structure and content of the new A-level geography syllabus. They will understand the geographical inquiry model and how to apply it to their classroom pedagogy for the new A-level geography syllabus. They will also develop sample unit plans and pedagogical resources for the new A-level geography syllabus.

IHS2212 Field-based Learning in the Neighbourhood for Lower Secondary Geography Syllabuses (TRAISI Code: 21670)

Duration : 8 hours

Date : 5 April 2016 (1st run)
6 April 2016 (2nd run)
27 April 2016 (3rd run)
28 April 2016 (4th run)

Time : 8.30am to 5.00pm

Trainer : Dr Tricia Seow

Course fees for MOE participants : \$86.60 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$514.60 (includes 7% GST and \$1 copyright fee)

Target audience : Secondary School Teachers

The course aims to provide knowledge and skills in the conduct of geographical field investigations in the neighbourhood at the lower secondary level. During the course, participants will learn techniques to facilitate FbL in their neighbourhoods aligned to the housing GI, examine how the housing GI enables students to acquire geographical knowledge and skills on the topic of housing, and explore ways to manage the planning and conduct of the GI.

IHS2213 Field-based Learning at Little India for Upper Secondary Geography Syllabuses (TRAISI Code: 21669)

Duration : 8 hours

Date : 24 May 2016 (1st run)
25 May 2016 (2nd run)

Time : 8.30am to 5.30pm

Trainer : Dr Tricia Seow

Course fees for MOE participants : \$86.60 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$514.60 (includes 7% GST and \$1 copyright fee)

Target audience : Secondary School Teachers

The course aims to provide knowledge and skills in appraising the suitability of a site and developing fieldwork opportunities for Tourism; using the example of Little India. Participants will learn how to recce a site for fieldwork on the Topic of Tourism through experiential learning at Little India. They will get the opportunity to explore the types of fieldwork questions and methods they can conduct with their students at the site, and how these are aligned to the curriculum.

IHS2219 Physical Geography Field Techniques and Equipment for Upper Secondary Teachers

Duration : 8 hours

Date : 26 Jan 2016

Time : 8.30am to 5.00pm

Trainers : Dr Tricia Seow and Associate Professor Kim Irvine

Course fees for MOE participants : \$ (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$ (includes 7% GST and \$1 copyright fee)

Target audience : Upper Secondary School Teachers

The course is planned to provide participants with advanced knowledge and skills on physical geography fieldwork. Participants will be provided with a hands-on learning experience undertaking geographical investigations on the topic of Weather and Climate.

■ History

IHS2215 Engaging Weaker Students in History (TRAISI Code: 22700)

Duration : 10 hours

Date : 20 January and 24 February 2016 (1st run)
21 January and 25 February 2016 (2nd run)

Time : 9.30am to 5.30pm (20 and 21 January 2016)
2.30pm to 5.30 pm (24 and 25 February 2016)

Trainers : Dr Suhaimi Afandi and Dr Chelva Rajah

Course fees for MOE participants : \$108.00 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$643.00 (includes 7% GST and \$1 copyright fee)

Target audience : Secondary School Teachers

This course offers teachers with an opportunity to identify and explore some issues that may account for students' difficulties when learning history. At the end of the course, participants will be able to:

- become familiar with aspects of Differentiated Instruction (DI), and consider the use of DI strategies in the teaching and learning of secondary history;
- identify learning difficulties or challenges students face when learning and reading about history; and
- design preliminary lesson strategies, instructional tools and learning scaffolds to engage students (especially weaker learners) in the history classroom.

IHS2217 Migration and Settlement in Colonial Singapore, 19th – early 20th Centuries (TRAISI Code: 22713)

Duration : 3 hours

Date : 20 January 2016

Time : 2.30pm to 5.30pm

Trainer : Assistant Professor Ivy Maria Lim

Course fees for MOE participants : \$33.10 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$193.60 (includes 7% GST and \$1 copyright fee)

Target audience : Lower Secondary School Teachers

This course is intended to discuss the phenomenon of migration and settlement in the historical context of colonial Singapore. By the end of the course, participants will be able to understand the push and pull factors in relation to migration to colonial Singapore, understand the processes by which migrants arrived in Singapore, and use oral history accounts to piece together migration stories from colonial Singapore.

■ Mathematics

IME1025 Designing Learning Activities that Integrate Learning Experience in Primary 1 and Primary 2 Mathematics

(TRAISI Code: 31111)

Duration: 12 hours

Date : 22, 29 February, 7 and 14 March 2016

Time : 2.30pm to 5.30pm

Trainer : Dr Koay Phong Lee

Course fees for MOE participants : \$129.40 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$771.40 (includes 7% GST and \$1 copyright fee)

Target audience : Primary School Teachers

Learning involves pupils actively engaged in the construction of knowledge, that is, to be hands-on and minds on. This workshop shows teachers how to design teaching and learning activities that incorporate Learning Experiences (LE) that will engage pupils in the mathematics classroom and support the implementation of the new mathematics curriculum.

IME4519 Teaching and Learning Lower Primary Mathematics with Understanding

(TRAISI Code: 30925)

Duration: 12 hours

Date : 18, 25 April, 9 and 16 May 2016

Time : 2.30pm to 5.30pm

Trainer : Dr Eric Chan

Course fees for MOE participants : \$129.40 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$771.40 (includes 7% GST and \$1 copyright fee)

Target audience : Primary School Teachers

This course will cover factors affecting children with mathematical learning difficulties, identify children's common errors and their difficulties through error analysis. The course will also cover diagnosis and plausible strategies in remediation efforts towards teaching for understanding; as well as the monitoring of remediation work. This course utilises a teaching for understanding approach.

IME1036 Designing Learning Activities that Integrate Learning Experience in Primary 3 and Primary 4 Mathematics

Duration: 12 hours

Date : 21, 28 April, 5 and 12 May 2016

Time : 2.30pm to 5.30pm

Trainer : Dr Joseph Yeo

Course fees for MOE participants : \$129.40 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$771.40 (includes 7% GST and \$1 copyright fee)

Target audience : Primary School Teachers

Learning involves pupils actively engaged in the construction of knowledge, that is, to be hands-on and minds on. This workshop shows teachers how to design teaching and learning activities that incorporate Learning Experiences (LE) in order to engage pupils in the mathematics classroom, as well as support the implementation of the new mathematics curriculum.

IME1039 Promoting "Connections" between Whole Numbers and Decimals (Pri 1 to 4)

Duration : 12 hours

Date : 22, 29 April, 6 and 13 May 2016

Time : 2.30pm to 5.30pm

Trainer : Assistant Professor Lee Ngan Hoe

Course fees for MOE participants : \$129.40 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$771.40 (includes 7% GST and \$1 copyright fee)

Target audience : Primary School Teachers

The focus of this course is on equipping teachers with the approaches to promote connected and deep learning in the primary mathematics classrooms through the teaching of whole numbers and decimals.

IME1037 Formative Assessment as part of Teaching and Learning in the Primary Mathematics Classroom

Duration : 12 hours

Date : 4, 11, 18 and 25 May 2016

Time : 2.30pm to 5.30pm

Trainer : Dr Dawn Ng

Course fees for MOE participants : \$129.40 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$771.40 (includes 7% GST and \$1 copyright fee)

Target audience : Primary School Teachers

The focus of this course is on developing formative assessment tasks as part of teaching and learning in primary mathematics classrooms.

IME1038 Helping Children Make Sense of Data Handling

Duration : 12 hours

Date : 22 and 23 June 2016

Time : To be advised

Trainer : Dr Joseph Yeo

Course fees for MOE participants : \$129.40 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$771.40 (includes 7% GST and \$1 copyright fee)

Target audience : Primary School Teachers

The course aims to increase teachers' pedagogical content knowledge for the teaching of topics found in Data Representation and Interpretation as well as Average. This workshop also shows teachers how to design teaching and learning activities that incorporate describing data, organising and reducing data, representing data, and analysing and interpreting data.

IME2039 Geometry in Secondary Additional Mathematics (TRAISI Code: 30765)

Duration : 12 hours

Date : 6, 13, 20 and 27 April 2016

Time : 2.30pm to 5.30pm

Trainer : Dr Yap Sook Fwe

Course fees for MOE participants : \$129.40 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$771.40 (includes 7% GST and \$1 copyright fee)

Target audience : Secondary School Additional Mathematics Teachers

This is a content-upgrading course on Geometry in upper secondary additional mathematics, where participants will be able to acquire essential content knowledge and tools relevant to the teaching of geometry topics in the additional mathematics syllabus.

IME2066 Effective Questioning and Facilitation Techniques for Secondary Mathematics Teachers (TRAISI Code: 31107)

Duration : 12 hours

Date : 7, 14, 21 and 28 April 2016

Time : 2.30pm to 5.30pm

Trainer : Assistant Professor Choy Ban Heng

Course fees for MOE participants : \$129.40 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$771.40 (includes 7% GST and \$1 copyright fee)

Target audience : Secondary School Mathematics Teachers

This course is designed for secondary mathematics teachers who wish to enhance their repertoire on the effective use of questioning and facilitation (Q&F) practices in the teaching of mathematics. It will engage the participants in analysing their current Q&F practices and trialling “new” techniques with their students in class. Participants will also share their experiences during face-to-face sessions.

IME2051 Activity-Based Lessons for Low Ability Pupils in the Lower Secondary Mathematics Classroom (TRAISI Code: 30874)

Duration : 12 hours

Date : 18, 25 April, 9 and 16 May 2016

Time : 2.30pm to 5.30pm

Trainer : Dr Joseph Yeo

Course fees for MOE participants : \$129.40 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$771.40 (includes 7% GST and \$1 copyright fee)

Target audience : Lower Secondary School Mathematics Teachers

This course provides an opportunity for the lower secondary mathematics teachers to understand the principles and rationale of using activity-based lessons in teaching and learning. This course will also assist lower secondary mathematics teachers to examine the techniques and processes of conducting activity-based lessons for their low-ability pupils. Teachers will also learn how to use manipulatives to help low-ability pupils understand mathematics concepts. Participants will revisit Concrete-Pictorial-Abstract (or C-P-A) approach to design activity-based lessons, including those for concept development and consolidation. Course participants are expected to participate in critical discussions pertaining to the various activities and through the process develop a deeper appreciation and greater insights into how low-ability pupils learn.

IME2089 Problems in Real-World Context: Design, Implementation, Assessment (TRAISI Code: 31246)

Duration : 12 hours

Date : 19, 26 April, 3 and 10 May 2016

Time : 2.30pm to 5.30pm

Trainer : Dr Dawn Ng

Course fees for MOE participants : \$129.40 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$771.40 (includes 7% GST and \$1 copyright fee)

Target audience : Secondary School Teachers

The use of problems in real-world contexts for teaching and learning has very much been in recent focus in Singapore schools and in international comparative studies such as PISA. Problems in real-world contexts are interesting platforms to showcase students' mathematical reasoning and communication. There are two parts to this course. The first part will present some task design guidelines for developing contextualised tasks which may involve differing degrees of open-endedness for various pedagogical purposes. The guidelines will be discussed and explored within the Singapore secondary school E-Math syllabus especially pertaining to the pedagogical content knowledge of teachers. The second part discusses some implementation and assessment focuses for real-world tasks of varying open-endedness.

IME2035 Algebra in Secondary Elementary Mathematics (TRAISI Code: 30762)

Duration : 12 hours

Date : 30 and 31 May 2016

Time : 9:30am to 4:30pm

Trainer : Dr Chua Boon Liang

Course fees for MOE participants : \$129.40 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$771.40 (includes 7% GST and \$1 copyright fee)

Target audience : Secondary School Teachers

At the end of the module, participants will be able to acquire essential content knowledge and skills relevant to the teaching of algebra topics in the upper secondary elementary mathematics syllabus.

IME2034 Statistics and Probability in Secondary Elementary Mathematics (TRAISI Code: 30759)

Duration : 12 hours

Date : 1 and 3 June 2016

Time : 9:30am to 4:30pm

Trainer : Dr Yap Sook Fwe

Course fees for MOE participants : \$129.40 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$771.40 (includes 7% GST and \$1 copyright fee)

Target audience : Secondary School Mathematics Teachers

This is one of the three content upgrading courses for PGDE (Lower Secondary) Mathematics teachers who wish to teach Elementary Mathematics at upper secondary level. At the end of the course, participants will be able to acquire essential content knowledge and tools relevant to the teaching of statistics and probability in the upper secondary elementary mathematics syllabus. Upper secondary mathematics teachers are also welcomed to attend the course to deepen their content knowledge.

IME2069 Teaching of Trigonometry in Secondary Additional Mathematics (TRAISI Code: 31143)

Duration : 12 hours

Date : 20 and 22 June 2016

Time : 9.00am to 4.00pm

Trainer : Associate Professor Toh Tin Lam

Course fees for MOE participants : \$129.40 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$771.40 (includes 7% GST and \$1 copyright fee)

Target audience : Secondary School Mathematics Teachers

This course discusses the pedagogy and the underlying principles based on sound content knowledge of additional mathematics trigonometry. At the end of the course, participants will be able to acquire essential content knowledge and tools relevant to the teaching of trigonometry in the additional mathematics syllabus.

IME2041 Teaching of Calculus in Secondary Additional Mathematics (TRAISI Code: 30764)

Duration : 12 hours

Date : 23 and 24 June 2016

Time : 9.00am to 4.00pm

Trainer : Associate Professor Toh Tin Lam

Course fees for MOE participants : \$129.40 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$771.40 (includes 7% GST and \$1 copyright fee)

Target audience : Secondary School Mathematics Teachers

This course discusses the pedagogy and the underlying principles of sound content knowledge of secondary school calculus. At the end of the course, participants will be able to acquire essential content knowledge and tools relevant to the teaching of calculus in the additional mathematics syllabus. This is one of the four content upgrading courses for PGDE (Lower Secondary) Mathematics teachers who wish to teach Additional Mathematics. Upper secondary additional mathematics teachers are also welcomed to attend the course to deepen their content knowledge.

IME2008 Mathematical Modelling for Secondary Mathematics (TRAISI Code: 31014)

Duration : 12 hours

Date : 28 June, 5, 12 and 19 July 2016

Time : 2:30pm to 5:30pm

Trainer : Dr Dawn Ng

Course fees for MOE participants : \$129.40 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$771.40 (includes 7% GST and \$1 copyright fee)

Target audience : Secondary School Mathematics Teachers

This hands-on course will introduce participants to mathematical modelling in secondary classrooms. It will involve participants working on a modelling task before they design and implement their own modelling tasks in schools. Actual pupils' work will be collected by the participants from the implementation of their tasks and these will be discussed during the course.

IME2083 Teaching H2 Further Mathematics: Complex numbers, Polar Curves and Conics (TRAISI Code: 31178)

Duration : 12 hours

Date : 7, 14, 21 and 28 April 2016

Time : 2.30pm to 5.30pm

Trainer : Assistant Professor Toh Pee Choon

Course fees for MOE participants : \$129.40 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$771.40 (includes 7% GST and \$1 copyright fee)

Target audience : Junior College Teachers

This course consists of two parts. The first part is an introduction to conic sections, namely the ellipse, parabola and hyperbola. We will study each of the cases in turn, with the aim of connecting the different definitions for these curves, i.e., the Geometric, Cartesian and Directrix-Eccentricity-Focus definitions. The computer software Geogebra will be used to illustrate and explore the various properties of the conics. Applications of the conics and their reflection properties will be discussed. The second part will focus on the geometry of complex numbers and some applications.

IME2084 Teaching H2 Further Mathematics: Matrices and Linear Spaces (TRAISI Code: 31180)

Duration : 15 hours

Date : 29 April, 6, 13, 20 and 27 May 2016

Time : 2.30pm to 5.30pm

Trainer : Dr Teo Kok Ming

Course fees for MOE participants : \$161.50 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$964.00 (includes 7% GST and \$1 copyright fee)

Target audience : Junior College Teachers

This course is a review of some topics in linear algebra that are relevant to the H2 Further Mathematics topics on matrices and linear spaces.

IME2082 Teaching of Statistical Reasoning in H1 Statistics (TRAISI Code: 31177)

Duration : 12 hours

Date : 29 April, 6, 13 and 20 May 2016

Time : 2:30pm to 5:30pm

Trainer : Dr. Yap Sook Fwe

Course fees for MOE participants : \$129.40 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$771.40 (includes 7% GST and \$1 copyright fee)

Target audience : Junior College Teachers

This course focuses on aspects of the new H1 Statistics syllabus that are not previously addressed in the Probability and Statistics strand of H1 Mathematics. The objectives of this course are to equip participants with the essential mathematical and pedagogical content knowledge relevant to the teaching of the new H1 Statistics syllabus.

IME2087 Teaching of Proofs (TRAISI Code: 31182)

Duration : 12 hours

Date : 3, 10, 17 and 24 May 2016

Time : 2.30pm to 5.30pm

Trainer : Associate Professor Zhao Dong Sheng

Course fees for MOE participants : \$129.40 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$771.40 (includes 7% GST and \$1 copyright fee)

Target audience : Junior College Teachers

This course provides the audience with the fundamental knowledge of propositional logic, structures of proposition, as well as some standard methods of proofs used in A-level mathematics. Various types of proof problems on different A-level topics will be used for in-class training and after class exercises. These can serve as seeds problems for teachers to pose more proof problems when they start to teach H2 Further Mathematics and H3 Mathematics. Some strategies of problem posing will also be discussed.

IME2088 Teaching of Problem Solving in H3 Mathematics (TRAISI Code: 31176)

Duration : 18 hours

Date : 30, 31 May and 1 June 2016

Time : 9.00am to 4.00pm

Trainer : Associate Professor Tay Eng Guan

Course fees for MOE participants : \$193.60 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$1,156.60 (includes 7% GST and \$1 copyright fee)

Target audience : Junior College Teachers

What does a mathematician do when he encounters an unfamiliar problem (perhaps one he has crafted himself)? Problem solving skills are process skills that are quite different from content knowledge. These skills either come naturally or need to be learnt. This course positions the learning about problem solving within the H3 mathematics syllabus and suggests ways of teaching problem solving skills to students.

■ Science

INS2123 Everyday Science in Foods (TRAISI Code: 60195)

Duration : 30 Hours

Date : 13, 20, 27 January, 3, 17, 24 February, 2,
2, 9, 23, 30 March 2016

Time : 2.30pm to 5.30pm

Trainers : Ms Johannah Soo and Mrs Mary Stevenson

Course fees for MOE participants : \$482.50 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$2,087.50 (includes 7% GST and \$1 copyright fee)

Target audience : Secondary School Teachers

This course is designed to introduce the scientific principles that underpin everyday cooking of the food we eat and enjoy. In each session, a specific food will be investigated with scientific edible experiment that can be applied to the teaching of Food and Consumer Education at secondary school levels.

IPD0121 Modelling Instruction in Physics

Duration : 14 hours

Date : 28 and 29 January 2016

Time : 9.00am to 5.00pm

Trainer : Mr Michael Douglas Crofton

Course fees for MOE participants : \$225.70 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$974.70 (includes 7% GST and \$1 copyright fee)

Target audience : Junior College Teachers

Participants will gain useful ideas on how to facilitate a model-centred, guided-inquiry method of instruction that serves to both enhance students' learning of concepts and core ideas in Physics as well as to develop a better understanding of the practices of science. This is aligned with the 2016 revised H2 Physics syllabus which places emphasis on how we know as well as what we know. Participants will work through examples of different types of student-centred lessons based on the modeling approach for a range of topics. They will experience the use of multiple representations (verbal, diagrammatic, graphical and algebraic) as conceptual tools for modeling physical objects and processes. Much time will be spent on the process by which students perform labs and use their data to discover the relationship of variables and fundamental equations of physics. Participants will also experience the use of whiteboarding as a tool to improve the quality of classroom discourse.

IPD0137 Designing Physics Lessons Using the Modelling Instruction Approach

Duration : 14 hours

Date : 1 and 2 February 2016

Time : 9.00am to 5.00pm

Trainer : Mr Michael Douglas Crofton

Course fees for MOE participants : \$225.70 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$974.70 (includes 7% GST and \$1 copyright fee)

Target audience : Junior College Teachers

This course is designed especially for teachers who have had prior experience with the Modelling Instruction approach and who would like to have a platform to network, share ideas and support fellow educators keen on implementing the Modelling approach in their classrooms. Participants will have the opportunity to design, develop and critique each other's lessons based on the Modeling Instruction approach to teach Physics concepts and practical skills for a range of topics. Participants will also experience the use of lab practicums as an innovative culminating activity within a typical Modelling cycle. This will provide students with the opportunity to apply the Physics models learned through hands-on, collaborative problem solving with the aid of specific experimental setups.

IPD0138 Designing Chemistry Lessons Using the Modelling Instruction Approach

Duration : 14 hours

Date : 1 and 2 February 2016

Time : 9.00am to 5.00pm

Trainer : Mr Larry Dukerich

Course fees for MOE participants : \$225.70 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$974.70 (includes 7% GST and \$1 copyright fee)

Target audience : Junior College Teachers

This course is designed especially for teachers who have had prior experience with the Modelling Instruction approach and who would like to have a platform to network, share ideas and support fellow educators keen on implementing the Modelling approach in their classrooms. Participants will have the opportunity to design, develop and critique each other's lessons based on the Modelling Instruction approach to teach Chemistry concepts and practical skills for a range of topics. Participants will also experience the use of lab practicums as an innovative culminating activity within a typical Modelling cycle. This will provide students with the opportunity to apply the Chemistry models learned through hands-on, collaborative problem solving with the aid of specific experimental setups.

IPD2011 Investigative Case-Based Learning (ICBL): Teaching Biology in the 21st Century

Duration : 12 hours

Date : 15 and 16 March 2016 (1st run)

17 and 18 March 2016 (2nd run)

Time : 9.00am to 4.00pm

Trainers : Dr Margaret Waterman and Dr Ethel Stanley

Course fees for MOE participants : \$193.60 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$835.60 (includes 7% GST and \$1 copyright fee)

Target audience : Secondary School Teachers

In this very active course, participants will engage with several cases and investigations, all of which are aligned to the O-level Biology exam syllabus. Topics may include cells and genetics, osmosis and enzymes, biomolecules, plant and body systems and the environment. Participants will learn how to use cases in the classroom and consider the benefits and challenges of using this approach. Each teacher will receive a copy of Biological Inquiry and other materials. Teams of teachers will design their own case modules and plan for implementation as well as assessment of skills, knowledge, and attitudes.

INS1015 An Integrated Thematic Approach to Teaching Primary Science (TRAISI Code: 40892)

Duration : 18 hours

Date : 30, 31 May and 1 June 2016

Time : 9.00am to 4.00pm

Trainers : Mr Timothy Tan and Mr Mohd Faizal

Course fees for MOE participants : \$193.60 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$835.60 (includes 7% GST and \$1 copyright fee)

Target audience : Primary School Teachers

This course seeks to equip primary science teachers with pedagogical and content knowledge for teaching the five themes (Diversity, Cycles, Energy, Systems and Interaction) in the Primary Science (2014) Syllabus. The course is spread over two full days where relevant content knowledge will be reviewed in the context of inquiry science instruction and assessment. The overarching focus will be on the integrated nature of the themes, gaining scientific literacy, and on the relevance of science to everyday life of the child.

INS2129 Meaningful Learning of Modern Physics

(TRAISI Code: 41146)

Duration : 18 hours

Date : 25 and 26 May 2016

Time : 9.00am to 4.00pm

Trainers : Associate Professor Rajdeep Singh Rawat and Associate Professor Stuart Springham

Course fees for MOE participants : \$225.70 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$974.70 (includes 7% GST and \$1 copyright fee)

Target audience : Secondary School / Junior College Teachers

The course objectives entails abstract concepts in modern physics topics as well as instructing teachers on the development and importance of ideas and experiment in today's simulations for modern physics concepts.

STEM Education

Duration : 13 hours

Date : 30 and 31 May 2016

Time : 8.30am to 4.00pm

Trainer : Professor Edward Reeve

Course fees for MOE participants : \$150.80 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$899.80 (includes 7% GST and \$1 copyright fee)

Target audience : All Educators

Science, Technology, Engineering and Mathematics (STEM) education has become a priority to many countries around the world as they look to build a STEM-educated workforce that helps them to stay globally competitive and can help in solving many of today's global problems (e.g., food security or clean drinking water). Although STEM education has many interpretations, many support it as a "belief that promotes the teaching of STEM concepts, principles, and techniques in an integrated approach."

When discussing STEM education, it often only refers to activities and experiences in the core subjects areas of math and science; seldom does it refer to the "technology and engineering" areas, the "T&E" of STEM. If true STEM integration is to occur, teachers must have a good basic understanding of the concepts and practices associated with technology and engineering. The importance of teaching "engineering" in primary and secondary education today has been clearly shown in the recent release of the Next Generation Science Standards (NGSS) in the U.S. In the NGSS, a commitment has been made to integrate engineering design into the structure of science education by raising "engineering design" to the same level as scientific inquiry.

INS2130 Teaching the Revised H2 Chemistry (TRAISI Code: 41145)

Duration : 14 hours

Date : 31 May and 1 June 2016 (1st run)
2 and 3 June 2016 (2nd run)

Time : 9.00am to 5.00pm

Trainers : Assistant Professor Roshan Deen, Assistant Professor Teo Yong Chua and
Assistant Professor Teo Tang Wee

Course fees for MOE participants : \$225.70 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$974.70 (includes 7% GST and \$1 copyright fee)

Target audience : Secondary School / Junior College Teachers

The understanding of organic reactions from a functional group approach is an important tool in linking the fundamentals of organic chemistry. This, together with linking the concepts of physical chemistry, (chemical equilibrium, kinetics, electrochemistry) gives a broad understanding of the subject both at the microscopic and macroscopic level. Understanding the behaviour of matter in the microscopic level is important in discussing the macroscopic properties. In this course the link between the various chemistry disciplines based on energy transformations, organic reactions from a functional group approach will be discussed. The possible links in terms of structure-property-transformations will be elucidated.

INS2131 The Understanding of Practices of Science in revised H2 Biology

Duration : 7 hours

Date : 22 June 2016

Time : 9.00am to 5.00pm

Trainer : Associate Professor Tan Aik Ling

Course fees for MOE participants : \$113.35 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$487.85 (includes 7% GST and \$1 copyright fee)

Target audience : Secondary School / Junior College Teachers

In this one day workshop, participants will be working together to examine issues such as what is scientific knowledge, what counts as evidence in science and what is important for students to learn in Biology. These are important issues for Biology teachers to consider, particularly in the current teaching and learning landscape that emphasises on preparing learners for life in the 21st century. Participants will work together on activities that will enable them to develop a more critical perspective of their personal beliefs about science. Participants will also explore how these activities can be infused into their lessons.

■ Social Studies

IHS2208 Social Studies Performance Task Workshop for N(T) Syllabus (TRAISI Code: 21680)

Duration : 3 Hours

Date : 2 February 2016

Time : 2.30pm to 5.30pm

Trainer : Ms Lafrieda Nasir

Course fees for MOE participants : \$33.10 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$193.60 (includes 7% GST and \$1 copyright fee)

Target audience : Secondary School Teachers

This workshop offers social studies teachers the use of performance task as part of the inquiry approach to engage Normal Technical students in exploring issues that have local and/or global importance. At the end of the course, participants will be able to understand the current Performance Task presented in the SS NT Course Book, and come up with strategies to support the implementation of Performance Task in the SS NT classroom.

IHS2192 Social Studies Inquiry Workshop for the Revised GCE O and N(A) levels 2016 Social Studies Syllabuses (TRAISI Code: 22593)

Duration : 14 hours

Date : Early April 2016 (Dates to be confirmed)

Time : 9.00am to 5.00pm

Trainers : Miss Jasvinder Kaur and Ms Lafrieda Nasir

Course fees for MOE participants : \$150.80 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$899.80 (includes 7% GST and \$1 copyright fee)

Target audience : Secondary Schools and Junior College Teachers

This workshop offers social studies teachers the use of an inquiry model to engage secondary Express/Normal Academic students in exploring issues that have both local and global importance. At the end of the course, participants will be able to:

- use a range of tools and resources to support inquiry;
- understand and apply the inquiry method as a method of teaching and student learning;
- identify and develop essential problems or questions to engage students in inquiry; and
- help students develop their own conclusions and share their findings

IHS2190 Social Studies Symposium: Challenges in Multicultural Societies (TRAISI Code: 22578)

Duration : 3 hours

Date : 17 February 2016

Time : 2.30pm to 5.30pm

Trainer : Associate Professor Mark Baildon

Course fees for MOE participants : \$33.10 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$193.60 (includes 7% GST and \$1 copyright fee)

Target audience : Secondary School Teachers

This symposium provides social studies teachers with a deeper understanding of one of the most important political and social issues in Singapore today: The challenges of living in a multicultural society. 3-4 expert panelists will share their perspectives on this issue and engage participants in Q & A. This course will also help prepare social studies educators for the new social studies curriculum.

IHS2191 Social Studies Seminar: Discussions on Multicultural Societies (TRAISI Code: 22587)

Duration : 3 hours

Date : 18 February 2016

Time : 2.30pm to 5.30pm

Trainer : Associate Professor Mark Baildon

Course fees for MOE participants : \$33.10 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$193.60 (includes 7% GST and \$1 copyright fee)

Target audience : Secondary School Teachers

This seminar provides social studies teachers with a deeper understanding of one of the most important political and social issues in Singapore today. Teachers will also learn to facilitate classroom discussion on this issue. This course will help prepare social studies educators for the new social studies curriculum.

IHS2220 Social Studies Symposium: Transnational Security Issues

Duration : 3 hours

Date : Mid-April 2016 (date to be confirmed)

Time : 2.30pm to 5.30pm

Trainer : Associate Professor Mark Baildon

Course fees for MOE participants : \$33.10 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$193.60 (includes 7% GST and \$1 copyright fee)

Target audience : Secondary School Teachers

This symposium provides social studies teachers with a deeper understanding of one of the most important political and social issues in Singapore today: transnational issues in the 21st century. 3-4 expert panelists will share their perspectives on this issue and engage participants in Q & A. This symposium will also help prepare social studies educators for the new social studies curriculum.

IHS2221 Social Studies Seminar: Facilitating Discussions on Transnational Security Issues

Duration : 3 hours

Date : Mid-April 2016 (date to be confirmed)

Time : 2.30pm to 5.30pm

Trainer : Associate Professor Mark Baildon

Course fees for MOE participants : \$33.10 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$193.60 (includes 7% GST and \$1 copyright fee)

Target audience : Secondary School Teachers

This seminar provides social studies teachers with a deeper understanding of one of the most important political and social issues in Singapore today and how to facilitate classroom discussion on this issue. This seminar will help prepare social studies educators for the new social studies curriculum.

IHS2222 Social Science Methods to Prepare Teachers for Issues Investigation

Duration : 3 hours

Date : Mid-April 2016 (date to be confirmed)

Time : 2.30pm to 5.30pm

Trainer : Associate Professor Mark Baildon

Course fees for MOE participants : \$33.10 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$193.60 (includes 7% GST and \$1 copyright fee)

Target audience : Secondary School Teachers

This workshop will focus on social science inquiry methods in order to help teachers think about how these methods can be applied to Social Studies Issues Investigations. This workshop will help prepare social studies educators for the new social studies curriculum.

IHS1037 Nurturing Inquiring Minds: Social Studies for Primary 5 (TRAISI Code: 21402)

Duration : 8 hours

Date : 26 May 2016

Time : 8.30am to 5.30pm

Trainer : Dr Kho Ee Moi

Course fees for MOE participants : \$86.60 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$514.60 (includes 7% GST and \$1 copyright fee)

Target audience : Primary Five Teachers

This course provides Primary 5 Social Studies teachers with the key content and skills needed to implement the 2012 Primary Social Studies syllabus. Participants will be introduced to the inquiry approach to Social Studies for upper primary and develop a deeper understanding of the subject matter as well as the major concepts that will be taught at Primary 5.

IHS1038 Nurturing Inquiring Minds: Social Studies for Primary 6 (TRAISI Code: 21402)

Duration : 8 hours

Date : 29 June 2016

Time : 8.30am to 5.30pm

Trainers : Faculty from the Humanities and Social Studies Education Academic Group

Course fees for MOE participants : \$86.60 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$514.60 (includes 7% GST and \$1 copyright fee)

Target audience : Primary School Teachers

This course provides Primary 6 Social Studies teachers with the key content and skills needed to implement the 2012 Primary Social Studies syllabus. Participants will be introduced to the inquiry approach to Social Studies for upper primary and develop a deeper understanding of the subject matter as well as the major concepts that will be taught at Primary 6.

■ Research Skills

ILS0009 R4E201: Action Research in SDL and Collaborative Learning (TRAISI Code: 31164)

Duration : 24 Hours

Date : 1, 4 & 22 March 2016

Time : 8.30am to 5.30pm

Trainers : Associate Professor Chen Wenli and Associate Professor Doris Choy

Course fees for MOE participants : \$257.80 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$1,541.80 (includes 7% GST and \$1 copyright fee)

Target audience : All Educators

This course aims to equip the participants with the necessary knowledge and skills to make warranted claims as they begin to embark on the developmental journey of becoming practice-oriented researchers. The course is designed for participants to explore core research skills for various approaches to classroom inquiry so that they will be enabled to make evidence-based decisions pertaining to their teaching practices, related to self-directed and collaborative learning. It provides an overview of educational research, with an emphasis on classroom-based research.

The participants will be introduced to the concept, methodology, value, and other relevant issues about educational research and action research. They will be given opportunities to learn as school teachers, on how to read, interpret, analyse, and critique educational research literatures. They will also learn to use relevant research results and findings to change the practice of teaching and learning.

In the course, the participants will also gain useful experience in conceptualising and designing educational research for the improvement of teaching and learning, and in relation to self-directed and collaborative learning.

ICT0509 Enabling data-driven conversations: A Foundation Course in Statistical Data Analysis using IBM SPSS Statistics (TRAISI Code: 71182)

Duration : 14 hours

Date : 15 March 2016 (1st run)

17 March 2016 (2nd run)

18 March 2016 (3rd run)

28 April 2016 (4th run)

29 April 2016 (5th run)

16 June 2016 (6th run)

17 June 2016 (7th run)

Time : 8.30am to 5.30pm

Trainer : Assistant Professor Rotgans Ingmar Jerome

Course fees for MOE participants : \$86.60 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$514.60 (includes 7% GST and \$1 copyright fee)

Target audience : All Educators

This is a hands-on skills development course conducted in the computer lab at NIE. The objective of this course is to gain practical experiences in applied statistics for educational research. The aim of the course is to provide participants with the skills to confidently conduct a basic repertoire of statistical data analyses and interpret the results in light of their inquiry project.

INS2125 R4E 301: Research Practicum (Primary Science) (TRAISI Code: 41121)

Duration : 24 hours

Date : 9, 23 March, 6, 20, 27 April, 11 May,
17 August and 14 September 2016

Time : 2.30pm to 5.30pm

Trainer : Associate Professor Lee Yew Jin

Course fees for MOE participants : \$257.80 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$1,541.80 (includes 7% GST and \$1 copyright fee)

Target audience : Primary School Teachers

Participants will learn about how to plan, conduct, and evaluate educational research that makes a difference in primary science. With the classroom teacher in mind, this practical course will cover 1) the basics of research design, 2) ethics and literature reviews, and 3) common theories and methods from quantitative and qualitative approaches. The desired outcome would be a team-based pilot study to analyse teaching and learning within the respective schools of participants.

IPD0140 Improving Classroom Practices through Experimental Action Research

Duration : 24 hours

Date : 31 March, 4 and 8 April 2016

Time : 8.30am to 5.30pm

Trainer : Ms Poh Chwee Sian

Course fees for MOE participants : \$257.80 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$1,541.80 (includes 7% GST and \$1 copyright fee)

Target audience : All Educators

Teachers are expected to innovate their pedagogy to improve teaching and learning in their classrooms and to determine their soundness. This course will strengthen the teachers' skills in conducting experimental action research to determine the effectiveness of their pedagogy on their students' learning.

IME2071 Research Practicum for Educators (TRAISI Code: 31167)

Duration : 24 hours

Date : 1, 8, 15, 22, 29 April,
6, 13 and 20 May 2016

Time : 2.30pm to 5.30pm

Trainer : Associate Professor Ng Swee Fong

Course fees for MOE participants : \$257.80 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$1,541.80 (includes 7% GST and \$1 copyright fee)

Target audience : Primary School Teachers

Research is vital as it assesses observations and hypotheses made about a community's needs and services; it also contributes in creating new knowledge to improve services. As an active member of the community, mathematics teachers need to learn to conduct meaningful research that benefits their community, and more importantly, enhance the learning of the students. It is thus vital for teachers to engage in the processes that enable them to conduct meaningful research.

INS2128 R4E 301: Research Practicum (Biology)

Duration : 24 hours

Date : 2 March 2016 onwards

Time : 9.00am to 4.00pm

Trainer : Associate Professor Tan Aik Ling

Course fees for MOE participants : \$257.80 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$1,541.80 (includes 7% GST and \$1 copyright fee)

Target audience : All Educators

The R4E 301 course is a practice-oriented course for school teachers to conduct meaningful and sound school-based research. Students will receive guidance throughout the course, from the review of initial research question(s) to the writing of a simple research paper.

INS2127 R4E 301: Research Practicum (Chemistry) (TRAISI Code: 40994)

Duration : 24 hours

Date : 2 March 2016 onwards

Time : 2.30pm to 5.30pm

Trainer : Associate Professor Daniel Tan

Course fees for MOE participants : \$257.80 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$1,541.80 (includes 7% GST and \$1 copyright fee)

Target audience : All Educators

This course provides an introduction to chemistry education research and intends to help teachers develop and implement a lesson study or action research on a research topic relevant to them.

■ Student Development

IPD0139 Nurturing Positivity in Schools

Duration : 9 Hours

Date : 4 and 5 February 2016

Time : 1.00pm to 5.30pm

Trainer : Dr Imelda Caleon

Course fees for MOE participants : \$97.30 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$577.80 (includes 7% GST and \$1 copyright fee)

Target audience : All Educators

In this course, participants will be introduced to the key principles of positive psychology and positive education. The participants will be acquainted with PPAs that have been shown to be effective in varied contexts. The PPAs developed and implemented in an OER study, along with the results of the study, will be shared to the participants. The participants will also carry out PPAs, both individually and in groups, to enable them to develop a first-hand of experience and critical understanding of the PPAs. Lastly, participants will explore how these activities can be infused into their lessons.

AREAS OF LEARNING FOR CUSTOMISED WORKSHOPS

If you are interested in any of these workshops, please contact us for an option to customise these for your school/cluster. Our contact information is found at the back page of this course catalogue.

■ Developing Curriculum Capabilities of Teachers

ICT0100 Introduction to Lesson Study

Duration : 7 hours

Trainers : Faculty from the Curriculum, Teaching and Learning (CTL) Academic Group

Course fees for MOE participants : \$75.90 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$450.40 (includes 7% GST and \$1 copyright fee)

Target audience : All Educators

This course will introduce lesson study as an ongoing, teacher-led, professional learning process for participants to discuss curriculum and subject matter, pedagogy, assessment, student learning, and related issues. Participants will explore the various stages of the lesson study cycle from unit and lesson planning, research lesson implementation and observation. Students will also experience post-research lesson discussion and refinements made to the research lesson, vicariously, through the use of video cases. The benefits and challenges in being involved in lesson study will also be explored.

ICT0102 Experiencing Lesson Study

Duration : 7 hours

Trainers : Faculty from the Curriculum, Teaching and Learning (CTL) Academic Group

Course fees for MOE participants : \$75.90 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$450.40 (includes 7% GST and \$1 copyright fee)

Target audience : All Educators

This course provides the opportunity for teachers and school key personnel to experience a real live research lesson (RL) observation and post RL colloquium. Throughout this experience, participants will learn how to observe with a focus on student learning and be exposed to a variety of observation tools. They will discuss their observations in a post RL colloquium, supported by experienced faculty members of NIE and other resource persons as “knowledgeable others”. This course is offered mainly as a school-based work shop but it can also be cluster-based with teachers and key personnel from different schools. As part of the workshop will involve observing a real live RL, the course facilitator will work with a team of teachers in crafting the RL. Arrangements for crafting the RL will be discussed further with the course facilitator.

ICT0105 Equipping Facilitators for Lesson Study

Duration : 7 hours

Trainers : Faculty from the Curriculum, Teaching and Learning (CTL) Academic Group

Course fees for MOE participants : \$75.90 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$450.40 (includes 7% GST and \$1 copyright fee)

Target audience : All Educators

This course provides the opportunity for teachers and school key personnel who are involved in facilitating and leading lesson study (LS) cycles in their own school, to clarify their conceptions and discuss how to continue with and sustain the LS journey. In this course, LS facilitators will discuss challenges of implementation of LS in their own school, and how to steer the discussion in a lesson study cycle. The depth of discussion in this course will depend on the questions raised from the experience of involvement in previous LC cycles by the participants. As such, this course will only benefit participants who have been involved in LS.

ICT0208 Curriculum Decision Making For School Leaders

Duration : 14 hours

Trainers : Faculty from the Curriculum, Teaching and Learning (CTL) Academic Group

Course fees for MOE participants : \$150.80 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$899.80 (includes 7% GST and \$1 copyright fee)

Target audience : All Educators

This course serves to develop the capacities of school leaders to lead in school-based curriculum designing. It challenges school leaders to reclaim their professionalism as curriculum and pedagogical leaders of the school. Opportunities will be provided for participants to reflect on their personal theory of curriculum and the impact of their personal theory on curriculum decisions regarding goals, objectives, content, structure, assessment, teaching approaches and the scope and sequence of learning experiences.

IME1032 School-based Mathematics Curriculum Development

Duration : 24 hours

Trainer : Assistant Professor Lee Ngan Hoe

Course fees for MOE participants : \$257.80 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$1,541.80 (includes 7% GST and \$1 copyright fee)

Target audience : Primary School Mathematics Teachers

This course provides experienced primary mathematics teachers with the knowledge and skills needed to plan, implement and evaluate mathematics curriculum innovations at the school level.

- Developing Assessment Capabilities of Teachers

ICT0300 Assessment Literacy in the Primary/Secondary Classroom

Duration : 14 hours

Trainers : Faculty from the Curriculum, Teaching and Learning (CTL) Academic Group

Course fees for MOE participants : \$150.80 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$899.80 (includes 7% GST and \$1 copyright fee)

Target audience : All Educators

This course helps primary/secondary teachers clarify their understanding of assessment, teaching and learning within the context of Singapore's 'Holistic Assessment'/ 'Balanced Assessment' aspiration. They should be able to develop an assessment plan with suitable emphasis on assessment for learning at the departmental or school-wide level to build coherence of formative and summative assessment practices.

ICT0309 Quality Assessment Rubrics

Duration : 3 hours

Course fees for MOE participants : \$33.10 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$193.60 (includes 7% GST and \$1 copyright fee)

Target audience : All Educators

This course provides an introduction to key elements and principles of rubric design. Participants will review several different types of rubrics (e.g., holistic, analytic, general and task-specific rubrics) and discuss their effectiveness for different purposes of teaching and assessment. In particular, there will be an emphasis on distinguishing the use of a rubric in formative and/or summative assessment. The participants will be given an opportunity to design a rubric that should be immediately useful for their classroom teaching and assessment, leading to sharing of their works. Finally, issues of staff competency in effectively designing and using rubrics would be presented.

ICT0313 Designing Quality Alternative Assessments

Duration : 7 hours

Trainers : Faculty from the Curriculum, Teaching and Learning (CTL) Academic Group

Course fees for MOE participants : \$75.90 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$450.40 (includes 7% GST and \$1 copyright fee)

Target audience : All Educators

This course is intended to increase participants' knowledge and skills about alternative assessment concepts and connections to curricular aims. It gives participants experience in developing or adapting alternative assessment tasks for use in schools. Participants will practise evaluating potential alternative assessment tasks for newly-emerging curricular goals (e.g., 21st century skills and citizenship education).

ICT0314 Nurturing Self-regulated Learners through Student Self-assessment

Duration : 7 hours

Trainers : Faculty from the Curriculum, Teaching and Learning (CTL) Academic Group

Course fees for MOE participants : \$75.90 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$450.40 (includes 7% GST and \$1 copyright fee)

Target audience : All Educators

This course is intended to increase participants' understanding of the two key concepts: Self-regulated Learning and Student Self-assessment; and more importantly, the relationship between the two. Participants will have opportunities to craft and critique classroom activities that will help promote student self-assessment and ultimately self-regulated learning.

IEL1045 Grammar for Assessment (Primary)

Duration : 24 hours

Trainers : Faculty from the English Language and Literature (ELL) Academic Group

Course fees for MOE participants : \$257.80 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$1541.80 (includes 7% GST and \$1 copyright fee)

Target audience : Primary School Teachers

This course aims to introduce participants to core prescriptive grammatical knowledge required in assessment papers. The course will be conducted through eight sessions (3 hours each). Participants will also be introduced to different grammar references, including Michael Swan's Practical English Usage, which is given to all schools and which they can utilise in the classroom.

By the end of the course, participants should be able to explain grammar questions/answers commonly found in assessment papers, using the knowledge gained in the course.

■ Developing the Pedagogical Repertoire of Teachers

ICT0202 Differentiated Instruction for Diverse Learners

Duration : 7 hours

Trainers : Faculty from the Curriculum, Teaching and Learning (CTL) Academic Group

Course fees for MOE participants : \$75.90 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$450.40 (includes 7% GST and \$1 copyright fee)

Target audience : All Educators

This course provides an overview of differentiated instruction (DI), with its basic principles and components. It aims to help participants develop an understanding of different learner needs and interests in the regular classroom. The teachers will explore the principles and practices of differentiated instruction and learn to cater to these needs using DI principles and strategies. As part of the course, participants will also adapt and differentiate activities/materials to meet varied learning needs and interests. Participants will analyse and discuss issues in implementation, as well as solutions to problems inherent in a differentiated classroom. The roles of teachers will be examined and possible challenges will also be discussed.

IPE0027 Coaching Youths in Sports

Duration : 20 hours

Trainer : Assistant Professor Koh Koon Teck

Course fees for MOE participants : \$215.00 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$1,285.00 (includes 7% GST and \$1 copyright fee)

Target audience : Secondary School / Junior College Level Coaches and Teachers

This course is designed to equip coaches and teachers with the necessary skills and knowledge in dealing with young athletes who are involved in recreation and developmental sports in schools. This course provides an introduction to the theory of coaching and learning in a school sports setting. It covers various aspects relating to effective coaching of young athletes for training and competition. The course will have a mix of practical and theoretical aspects to equip coaches and teachers with the necessary skills for developing basic knowledge and skills to deal with young athletes effectively in sports.

IPE0026 Coaching Children in Sports

Duration : 20 hours

Trainer : Assistant Professor Koh Koon Teck

Course fees for MOE participants : \$215.00 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$1,285.00 (includes 7% GST and \$1 copyright fee)

Target audience : Primary School Coaches and Teachers

This course is designed to equip coaches and teachers with the necessary skills and knowledge in dealing with children who are involved in recreation and developmental sports. This course provides an introduction to theory of coaching and learning in the school sports setting and will cover various aspects relating to effective coaching of children for training and competition. The course will have a mix of practical and theoretical aspects to equip coaches and teachers the necessary skills for developing basic knowledge and skills for coaching children involved in sports.

ILS1002 Supporting Self-Directed and Collaborative Learning with ICT

Duration : 8 hours

Trainers : Faculty from the Learning Science and Technology (LST) Academic Group

Course fees for MOE participants : \$86.60 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$514.60 (includes 7% GST and \$1 copyright fee)

Target audience : All Educators

Participants will be introduced to the key concepts of self-directed and collaborative learning. These concepts will be explored through worked examples. Participants can expect to work in groups to design tasks that incorporate self-directed and collaborative learning for teaching and learning. Discussions on issues relating to lesson design, facilitation and use of ICT to support self-directed and collaborative will also be raised in the course.

IME1028 Error Analysis and Remediation

Duration : 12 hours

Trainer : Associate Professor Ng Swee Fong

Course fees for MOE participants : \$129.40 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$771.40 (includes 7% GST and \$1 copyright fee)

Target audience : Open to any individuals who wish to understand why primary children make the errors with the four operations and help them

Not all mistakes are careless mistakes. The mistakes made by children may be symptomatic of some underlying misconceptions. Such errors are defined as systematic errors. Unless teachers understand why children make such mistakes, re-teaching the concept would not be helpful to these children. In this course, examples of systematic errors involving counting, whole numbers and the four operations are analysed to understand why children make such errors.

IME1029 Using the SPUR Framework to Assess Primary Pupil Understanding in Mathematics

Duration : 12 hours

Trainer : Professor Berinderjeet Kaur

Course fees for MOE participants : \$129.40 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$771.40 (includes 7% GST and \$1 copyright fee)

Target audience : Primary School Mathematics Teachers

SPUR (S-skills, P-properties, U-uses, R-representations) is a multi-dimensional framework for assessing understanding of mathematics. The course will ensure that students have a robust understanding of how mathematics assessment tasks should assess Skills, Properties, Uses and Representations of the knowledge they acquire. This course will introduce participants to the framework and provide them with the knowledge and skills to use in their classroom instruction.

IME2079 Using the SPUR Framework to Assess Secondary Pupil Understanding in Mathematics

Duration : 12 hours

Trainer : Professor Berinderjeet Kaur

Course fees for MOE participants : \$129.40 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$771.40 (includes 7% GST and \$1 copyright fee)

Target audience : Secondary School Mathematics Teachers

SPUR (S-skills, P-properties, U-uses, R-representations) is a multi-dimensional framework for assessing understanding of mathematics. The course will ensure that students have a robust understanding of how mathematics assessment tasks should assess Skills, Properties, Uses and Representations of the knowledge they acquire. This course will introduce participants to the framework and provide them with the knowledge and skills to use in their classroom instruction.

IME1027 Activity-Based Lessons for Low-Ability Pupils in the Upper Primary Mathematics Classroom

Duration : 12 hours

Trainer : Dr Joseph Yeo Kai Kow

Course fees for MOE participants : \$129.40 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$771.40 (includes 7% GST and \$1 copyright fee)

Target audience : Upper Primary School Mathematics Teachers

The need to cater to low-ability pupils who may require different approaches to help them realise their full potential academically is evident in the mathematics curriculum. Many primary mathematics teachers have responded by conducting remediation for these groups of low-ability pupils. This course will provide primary mathematics teachers with the fundamental background of key characteristics of low-ability pupils. The emphasis of the course is for participants to learn how to implement varied mathematical activities for low-abilities pupils in the mainstream classroom. Activity-based lessons offer opportunities for pupils to demonstrate their mathematical thinking, reasoning processes, problem-solving and communication skills. Participants will revisit the Concrete-Pictorial-Abstract (or C-P-A) approach to design activity-based lessons, including those for concept development and consolidation.

This workshop will also assist primary mathematics teachers in examining the techniques and processes of designing activity-based lessons for their primary pupils. Course participants are expected to participate in critical discussions pertaining to the various activities, and through the process, develop a deeper appreciation and greater insight into how low-ability pupils learn. Hence the course will embrace a learner-centred pedagogy to provide opportunities for the participants to undertake serious reflection and to assume greater ownership of their learning experiences.

Statistical Stimulation

Duration : 6 hours

Trainer : Dr Cheang Wai Kwong

Course fees for MOE participants : \$65.20 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$386.20 (includes 7% GST and \$1 copyright fee)

Target audience : Junior College Teachers

Participants will learn (1) how simulation can be used to generate sampling distributions in various contexts; (2) how R programs can be written/modified to perform simulation. The free R software, available from <http://www.r-project.org>, will be used.

The Problem Wheel – A Metacognitive Approach to “Kickstart” Students’ Mathematical Problem Solving

Duration : 12 hours

Trainer : Assistant Professor Lee Ngan Hoe

Course fees for MOE participants : \$129.40 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$771.40 (includes 7% GST and \$1 copyright fee)

Target audience : Primary School Mathematics Teachers

This course is to provide primary mathematics teachers with a metacognitive means to “kickstart” the problem-solving process in primary mathematics students.

■ Enhancing the Professionalism of Teachers

ILS0001 Classroom Management

Duration : 7 hours

Trainers : Faculty from the Learning Sciences and Technologies (LST) Academic Group

Course fees for MOE participants : \$75.90 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$450.40 (includes 7% GST and \$1 copyright fee)

Target audience : All Educators

Using small group discussions, facilitated by school practitioners, and a case study approach; this full-day course serves to equip primary/secondary/Junior College teachers with the principles of classroom management and knowledge of a range of strategies to manage their classrooms to bring about effective learning. Teachers will also gain awareness on how positive Teacher-Student Relationship (TSR) can help them with classroom management. Teachers’ classroom cases are also used for collaborative problem-solving, discussion and presentations.

ICT0407 Talk in our Classroom

Duration : 6 hours

Trainers : Faculty from the Curriculum, Teaching and Learning (CTL) Academic Group

Course fees for MOE participants : \$75.90 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$450.40 (includes 7% GST and \$1 copyright fee)

Target audience : All Educators

This course promotes a new culture of teacher and student talk in the classroom that goes beyond the IRE/F (Initiation-Response-Evaluation/Feedback) interaction mode. This workshop promotes dialogic teaching, which has the potential to engage learners, stimulate and extend their thinking, and advance their learning and understanding across subjects. This course aims to prepare teachers for handling the C2015 policies of maximising students’ learning outcomes, in particular, Self-directed Learning (SDL) and SEL (Social-Emotional Learning) competencies. Dialogic talk may also be used as a powerful tool for scaffolding formative assessment events in the classroom and will help participants in their understanding of talk, questioning strategies and formative assessment.

ICT0415 Developing Critical and Inventive Thinking through Design Projects

Duration : 6 hours

Trainers : Faculty from the Curriculum, Teaching and Learning (CTL) Academic Group

Course fees for MOE participants : \$65.20 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$386.20 (includes 7% GST and \$1 copyright fee)

Target audience : All Educators

This course explores a way of teaching and learning critical thinking skills and inventive thinking skills through a single programme or project. By experiencing the learning process themselves, participants will examine how design projects can be used to develop students' critical and inventive thinking skills.

ICT0416 Design Thinking as a Methodology for Developing 21st Century Skills and Competencies: Introduction for Educators

Duration : 3 hours

Trainers : Faculty from the Curriculum, Teaching and Learning (CTL) Academic Group

Course fees for MOE participants : \$33.10 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$193.60 (includes 7% GST and \$1 copyright fee)

Target audience : All Educators

In this introductory workshop, participants will learn what design thinking is, with a focus on understanding the core values and sensibilities of the design thinker. They will experience the design thinking processes in a hands-on activity, and then critically explore how design thinking may be used to develop 21st century skills and competencies in schools.

ICT0417 Design Thinking: Tools and Methods

Duration : 14 hours

Trainers : Faculty from the Curriculum, Teaching and Learning (CTL) Academic Group

Course fees for MOE participants : \$150.80 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$899.80 (includes 7% GST and \$1 copyright fee)

Target audience : All Educators

This course introduces participants to the concept of design thinking, as well as to a basic set of design thinking tools and processes. Participants will immediately put into practice the tools and processes they have learned as they attempt to create innovative solutions to solve a real-world human problem. The course ends with an exploration of possible ways of applying design thinking tools and processes in Singapore schools.

ICT0419 Dialogic Argumentation: Development of Thinking and Expository Writing

Duration : 7 hours

Trainers : Faculty from the Curriculum, Teaching and Learning (CTL) Academic Group

Course fees for MOE participants : \$75.90 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$450.40 (includes 7% GST and \$1 copyright fee)

Target audience : All Educators

This course will introduce participants to the practice of dialogic argumentation. We explore the theory of how social argumentation mirrors individual thinking and is thus a productive path to developing 21st century dispositions and thinking values. The curriculum is a structured approach designed to help students debate broad issues represented by 2 opposing perspectives. Research evidence shows that repeated practice of dialogic argumentation improves students' expository essay writing, as expository essay writing requires a high level ability to integrate multiple perspectives and evidence. Participants will engage in dialogic argumentation with each other in order to better understand the argumentation process. Time will also be set aside for participants to discuss issues of implementation in the classroom.

ICT0500 Teaching Inquiry through Reflective Practice

Duration : 7 hours

Trainers : Faculty from the Curriculum, Teaching and Learning (CTL) Academic Group

Course fees for MOE participants : \$75.90 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$450.40 (includes 7% GST and \$1 copyright fee)

Target audience : All Educators

Reflective Practice serves to provide teachers with the capacity to look into the work they do every day so as to shape meaningful practice from the various events and situations that they confront in the daily grind of their practice. In this course, we introduce teachers to the theories and practice of reflection, and ways to make reflection a meaningful habit to support their work.

ICT0504 Action Research for Schools

Duration : 7 hours

Trainers : Faculty from the Curriculum, Teaching and Learning (CTL) Academic Group

Course fees for MOE participants : \$75.90 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$450.40 (includes 7% GST and \$1 copyright fee)

Target audience : All Educators

Action research in education is an essential part of teachers' professional growth. It aims at promoting teachers' reflection and refinement on their practices, producing local/contextual knowledge, and sharing this knowledge with professional communities. In this course, we introduce the qualitative methods in Action Research, data analysis in qualitative Action Research, and consideration of qualitative and quantitative methods in Action Research on teaching. This course is designed to help teachers to acquire competencies in designing, using and evaluating this methodology for the purpose of professional development.

ICT0505 Qualitative Research for Education Practitioners

Duration : 14 hours

Trainers : Faculty from the Curriculum, Teaching and Learning (CTL) Academic Group

Course fees for MOE participants : \$150.80 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$899.80 (includes 7% GST and \$1 copyright fee)

Target audience : All Educators

By the end of the course, participants will be able to give due consideration to the concepts, principles and theories underlying qualitative educational research designs and methods and provide a clear rationale for using qualitative methods and analysis for their own action research studies. Participants will design a rigorous qualitative study in terms of data collection and analysis and interpret, discuss, and write up findings derived from data collected from field research.

Teacher Leadership for Effective PLC Facilitation

Duration : 12 hours

Time : 2.00pm to 5.00pm

Trainer : Assistant Professor Hairon Salleh

Course fees for MOE participants : \$129.40 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$771.40 (includes 7% GST and \$1 copyright fee)

Target audience : All Educators

Professional Learning Communities (PLCs) have become increasingly popular in the local education scene. This is not surprising bearing in mind that PLCs, when done right, has the potential to increase the collective capacity of school organizations. At a more microscopic level, PLCs have immense potential to bring about the development of teacher knowledge, and thus having an impact on improvements in teacher teaching practice, student learning, and student learning outcomes. However, this sequence of school improvement is very much dependent on the quality of teacher learning that takes place in PLCs. Just as the quality of teacher learning can vary from one mentoring relationship to another and from one workshop to another, the quality of teacher learning in PLCs will expectedly vary from one PLC to another. PLCs, like any other group situation, are and cannot be devoid of leadership – in this case, teacher leadership, given that the members of PLCs usually and predominantly consist of teachers. The quality of teacher learning is therefore reliant on the quality of teacher leadership. This assertion, however, begs further questions. Who are the potential candidates for teacher leaders in PLCs? What are the knowledge, skills and disposition that teacher leaders ought to have? How are they to be developed? The series of workshops planned for this course seek to provide the learning spaces for potential teacher leaders to hone in and sharpen their knowledge, skills and disposition on teacher leadership to bring about positive teacher learning in PLCs. By the end of the course, teacher leaders will be able to: 1) Articulate the key features of PLCs, 2) Identify the key characteristics of teacher leadership, 3) Unpack the effects of teacher leadership in PLCs on teacher knowledge, teacher teaching practice, student learning, and student learning outcomes, 4) Outline and demonstrate the concepts and principles of teacher leadership in PLCs, 5) Specific and demonstrate the 3 stages of PLC participation, 6) Articulate and demonstrate the 5 PLC conversation questions, 7) Enunciate and demonstrate the 7 PLC conversation activities. The modes of learning include: lecture, group discussions, demonstrations, exemplars, and simulations.

Developing a Learning Organisation in Schools

Trainer : Dr William Choy

This course seeks to use the framework of the P. Senge Learning Organization as a basis for developing and facilitating the learning of schools and its members, so that they will continuously transform themselves into progressive schools.

The professional development course will focus on the five main characteristics of a learning organisation: systems thinking, personal mastery, mental models, a shared vision, and team learning, as part of the course teaching.

Developing Effective Organisation Cultures in Schools

Trainer : : Dr William Choy

This course seeks to coach school leaders on how to shape their schools' cultures by using active and reflective approaches and practices as postulated by Kent D. Peterson and Terrence E. Deal (2009). The course will systematically look at contemporary issues and challenges facing school leaders, as they seek to build strong and positive school cultures, and achieve school performance and student outcomes.

■ Enhancing Content Knowledge

IPE0025 Sports Injury: Prevention and Management (for PE and Sports CCA Teachers)

Duration : 20 hours

Trainers : Assistant Professor Swarup Mukherjee

Course fees for MOE participants : \$215.00 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$1285.00 (includes 7% GST and \$1 copyright fee)

Target audience : Trained PE teachers

This course is designed to provide students with the fundamental knowledge and skills to understand the types, causes and mechanisms of sports injuries. The course will also include the principles of prevention and management of sports injuries.

IPE0028 Psychological Preparation for Athletes in Sports

Duration : 20 hours

Trainer : Professor John Wang

Course fees for MOE participants : \$215.00 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$1285.00 (includes 7% GST and \$1 copyright fee)

Target audience : Coaches and Teachers

This course helps coaches and teachers become more knowledgeable in terms of the mental demands of sports in competition. This course also provides an introduction to applied sport psychology in the school setting. This course introduces various mental skills for training to help athletes in training and competition. A mix of practical and theoretical aspects in this course will equip coaches and teachers with the necessary skills for developing basic mental skills training for athletes.

IPE1037 Strength and Conditioning (for PE and Sports CCA teachers)

Duration : 20 hours

Trainer : Mr Mohammed Azhar Bin Yusof

Course fees for MOE participants : \$215.00 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$1285.00 (includes 7% GST and \$1 copyright fee)

Target audience : PE and Sports CCA Teachers

This course is designed to equip participants with research-based knowledge of strength and conditioning, and how it can help improve physical fitness, and performance in sports and NAPFA for students (primary to junior college level). Participants will be taught to design a training plan for students using plyometrics, speed and agility drills.

IME1031 Some Model Drawing Techniques for Ratio and Proportion Problems

Duration : 3 hours

Trainer : Dr Cheang Wai Kwong

Course fees for MOE participants : \$33.10 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$193.60 (includes 7% GST and \$1 copyright fee)

Target audience : Primary School Teachers

The course will examine examples to illustrate some useful techniques of drawing models for ratio and proportion problems; as well as harder examples to show how different techniques can be combined.

IME2077 Selected Topics on Ideas of Statistics - Promote Statistical Literacy for Mathematics Teacher

Duration : 6 hours

Trainer : Dr Zhu Ying

Course fees for MOE participants : \$65.20 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$386.20 (includes 7% GST and \$1 copyright fee)

Target audience : Secondary School / Junior College Mathematics Teachers

The ideas of statistics are more important to convey to students, compared to skills and knowledge. This course aims at a good understanding of the key ideas of statistics to enhance statistical literacy and statistical thinking.

Selected topics include: which average is the best, measures of variation, hypothesis testing and justice system, big data and cluster analysis, correlation and causation in regression analysis, and how to use ideas of statistics to understand the world.

Real life examples will be examined for conceptual understanding and analysing data. Misuse of statistical concepts in teaching and learning will also be explored in this course.

IME2076 What has elementary number theory got to do with school arithmetic?

Duration : 9 hours

Trainer : Dr Teo Kok Ming

Course fees for MOE participants : \$97.30 (includes 7% GST and \$1 copyright fee)

Course fees for non-MOE participants : \$578.80 (includes 7% GST and \$1 copyright fee)

Target audience : Secondary School Mathematics Teachers

Arithmetic is the very first topic covered in secondary one mathematics. Students learn about factors, primes, prime factorisation, highest common factor and lowest common multiple. One application of prime factorisation is finding square roots and cube roots of whole numbers. For example, to find the square root of 2025, we express 2025 as product of primes $3^4 \times 5^2$, from which we obtain the answer $3^2 \times 5 = 45$. On the other hand, the square root of 200 is not a whole number because $200 = 2^3 \times 5^2$ and the power of 2, which is 3, is odd. In contrast, we cannot say that the square root of $324 = 2^2 \times 3^4$ is not a whole number because the power of 2 is even. Of course, we argue that we cannot make this conclusion because $2^2 \times 3^4$ is not a prime factorisation of 324. So what is so special about prime numbers? Why do we have to write a whole number N in prime factorisation form to determine conclusively whether the square root of N is a whole number or not? In this course, we shall discuss the mathematical principle behind this, and also explain why the algorithm for finding HCF and LCM using prime factorisation works.

We shall also touch on the representation of real numbers in decimals. What is the difference between rational and irrational numbers written in decimals? How do we know whether a fraction m/n written in decimal is terminating or non-terminating ($2/5 = 0.4$ is terminating, $2/3 = 0.666\dots$ is non-terminating)? These questions can be answered using elementary number theory.

We will also discuss some real-life applications of number theory; for example, how is the official reference of NRIC No., or the ISBN of books, obtained? We shall share some interesting mathematical puzzles involving number theory. For example, can you get four gallons of water using five and three gallon jugs with no markings? (In the movie "Die Hard 3", John McClain (played by Bruce Willis) and Zeus (played by Samuel L. Jackson) have to solve this puzzle posed by the villain Peter Krieg (played by Jeremy Irons) in order to defuse a bomb. Had the villain asked them to get four gallons using three and six gallons jugs, would they be able to solve it?)

EXAMPLES OF CUSTOMISED SCHOOL-BASED WORKSHOPS IN 2015

No.	Course Code	Course Title	Duration (Hrs)	School
1	ICT0007	Lesson Study for Teacher Leaders	3	Eunos Primary School
2	ICT0102	Experiencing Lesson Study	9	Eunos Primary School
3	ICT0202	Differentiated Instructions for Diverse Learners	6	North View Secondary School
4	ICT0419	Dialogic Argumentation: Development of thinking and expository writing	3	Dunman High School
5	IEC4019	Engaging Students with Special Needs in Mainstream Classrooms	12	Jurong Primary School
6	IEL1045	Grammar for Assessment (Primary)	9	Rulang Primary School
7	IEL1047	Constructing the narrative: Teaching & planning a writing programme within the school curriculum (Primary 3/4/5/6)	24	Rulang Primary School
8	IEL2080	Mastering Reading Comprehension	9	Teck Whye Secondary School
9	IHS0003	Conducting Inquiry-based Fieldwork	5	Springdale Primary School
10	IHS6005	Multicultural Studies	24	Dunman High School
11	IHS6008	Research and Issues in Geographic Education	6	Dunman High School
12	ILS0008	Technological Pedagogical Content Knowledge for ICT Lesson Design	6	Kranji Primary School
13	IME2075	Problems in Real-World Contexts - Elements of Task Design	39	Zhonghua Secondary School
14	IME2081	Teaching H2 Further Mathematics: Applications of Integration and Numerical Methods	12	Nanyang Junior College
15	IME2082	Teaching of Statistical Reasoning in H1 Statistics	8	Hwa Chong Institution
16	IME2083	Teaching H2 Further Maths: Complex numbers, Polar Curves and Conics	8	St Andrew's Junior College
17	IME2085	Teaching H2 Further Mathematics: Differential Equations and Mathematical Modelling	12	Nanyang Junior College
18	IME2086	Teaching H2 Further Mathematics: Statistics	3	Hwa Chong Institution
19	INS1018	Exploring Force, Motion and Energy in Primary Science	9	Angsana Primary School
20	INS2132	Critical Thinking in Science Lessons	7.5	Dunman High School

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Disclaimer: Information is correct as at Nov 2015.

