

Master of Education (Learning Sciences and Technologies)

Course Code	Course Title	Course Synopses	AU
MED900	Educational Inquiry	This course introduces participants to the fundamental processes involved in conducting research such as formulating research questions, writing a review of the literature by synthesizing empirical studies, understanding various methodological approaches, collecting and interpreting research data. Participants in this course will have opportunities to develop the skills, knowledge and strategies needed to read, interpret, and evaluate the quality of research reports. In addition, participants will gain a critical understanding of quantitative, qualitative, and combined research approaches.	4
MED902	Integrative Project	This capstone course requires participants to identify an education issue which forms the focus of inquiry, locate and read the most relevant literature to generate suggested potential solution to address the problem. The solution should show evidence that they are able to take the available information and restructure it in an appropriate way to deal with the issue.	2
MLT901	Foundations of the Learning Sciences	This course considers present day discourses on learning/learning sciences in the broader context of education and how people learn. Students will deepen their understanding of constructivist learning approaches and learn to be cognizant of the vital roles of language and inquiry in human learning. Specific learning sciences topics include: * Conceptual change * Knowledge building * Cognitive apprenticeship * Learning in activity * Computer-supported collaborative learning * Learning in virtual worlds * Teacher education from the perspective of learning sciences * Design-based research	4

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MLT902	Orchestrating and scaffolding knowledge building with learning analytics, artificial intelligence and collaborative technologies	This course is relevant to school teachers or professional educators working in organizations. Knowledge building (KB) is a future-oriented pedagogy that aims to develop learners' knowledge building capacity through collaborative idea improvement in schools or organizations. It is especially critical for the development of knowledge creation societies. An important supportive socio-cognitive and technological environment is critical. Technologies such as computer-supported collaborative learning (CSCL) have been used to support knowledge building. Emerging technologies such as learning analytics and artificial intelligence are also gaining traction. In this course, you will participate as a member of a knowledge building community to explore and debate various issues related to fostering knowledge building in schools or your organizations. You will learn to craft inquiry-based learning activities, design thinking prompts to support intentional learning, facilitate social negotiation of ideas among learners and design both the face-to-face and online environments to help learners deepen their learning. You will also learn to leverage learning analytics and artificial intelligence to support learners in knowledge building.	4
MLT903	Technologies as Cognitive Tools	Topics include: * Definition of cognitive tool and reasons for using technology as cognitive tools * Classification of cognitive tools and research * Concept of affordances * Use of web 2.0 tools as cognitive tools * Theoretical underpinning of concept/mind mapping tools * Theoretical underpinning of computer supported collaborative learning (CSCL) * Affordances of CSCL tools for teaching and learning	4

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MLT906	Design of Technology-mediated Learning Environments	<p>The pervasiveness of technology is taken for granted in the new information age. Technology-mediated learning, whether using the Internet, using social media, or via mobile devices, are increasingly adopted. However, uninformed and uncritical uses of emerging technologies are often observed. This course aims to equip students with solid theoretical bases for making compelling design decisions with respect to technology- mediated learning environments in order to increase students cognitive engagement, learning experiences, and learning outcomes. This course will first discuss the issues that underpin traditional approaches to learning. Second, it will broaden students exposure to new learning theories, models, and design principles that can guide them through the design, development, and evaluation of technology-mediated learning environments. Third, this course will elaborate on the key design components of a technology-mediated learning environment, which include pedagogical design, social design, and technical design.</p>	4
MLT907	Neuroscience, Technology and Learning	<p>With advances in neuroscience and educational technology,teaching and learning accelerates into a new stratosphere.Accompanied by technological and social learning mobility,theres immense fluidity in the way content is delivered, howskills and dispositions are developed and how assessment isenacted. Learners have access to not only seamless digitallearning experiences but so too experiences that can beinformed by the latest neuroscientific research on how thebrain works. At the same time, uninformed and uncritical usesof emerging neuroscientific technologies can perpetuateneuromyths and pose as impediments to the overall learningprocesses. This course aims to equip students with solid theoreticalbases for making compelling pedagogical design decisionswith respect to the use of neuroscientific technologies forlearning and to optimize future-ready learning, as arising from evidence-informed scientific research. This course will covertenets of brain-based learning, learning as changes in neuralconnectivity, neuroscientific technology use, and applicationsfor the use of neuroscientific technologies inpedagogy/andragogy practice.</p>	4

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MLT908	Design of Interactive Learning Environments	Topics include: * ILEs and Key findings from the Learning Sciences * Critical Perspectives on Educational Technologies * Design of Learning Environments Orchestration * Design of Scaffolding for Learning * Design of Learning Experiences with New Media * Design of Learning with Collaborative Technologies * Design of Learning with Mobility * Educational Games * Design of Learning Spaces * Assessment of Collaborative Learning * Scaling educational innovations	4
MLT909	Research Methodologies for the Learning Sciences	1. Concept, purpose and process of conducting research 2. Research and ethics 3. Identifying research problem 4. Conducting critical literature review 5. Writing research questions 6. Designing surveys and interviews 7. Collecting quantitative data 8. Collecting qualitative data 9. Analysing quantitative data 10. Analysing qualitative data 11. Reporting research	4
MLT910	Technological and Pedagogical Considerations for ICT Integration	The topics include: Core issues of ICT integration Relevance of TPACK framework Key TPACK concepts Measuring TPACK Specific TPACK (seminar leading) Contextual influences of TPACK Students conception of TPACK	4
MLT911	Instructional Leadership for Technology-mediated Learning	The course aims to provide conceptual as well as practical understanding of Instructional Leadership for technology integration in schools. During the course, participants will use Activity Theory as a framework to analyse the various dynamic components that lead to effective technology integration in schools.	4
MLT912	Design for Blended Learning	This course introduces the theoretical foundations of blended learning and different forms of blended learning -blended asynchronous learning (e.g., using discussion forums), blended synchronous learning (e.g., using video conferencing), and flipped classroom (e.g., using recorded videos) -and providing practical guidelines on designing the blended learning environment in the school context. The focus of the course is on designing the blended learning environment and facilitating student learning in the environment.	4

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MLT912	Blended Learning in Schools	Topics include: * Pros and cons of using the blended learning approach * Identify and use appropriate ICT tools to support blended learning environments * Design blended learning environments * Develop blended learning environments	4
MLT913	Technology Supported Assessment	Topics include: * theories and approaches in assessment, with more focus on assessment for learning/formative assessment * pedagogies and approaches in designing assessment with technology * principles for the appropriate use of technology supported assessment * benefits and challenges, barrier and enablers in technology supported assessment	4
MLT914	Educational Design Research	Topics include: * research designs and design research * two-fold yield of educational design research * quality criteria for evaluating interventions * educational design research models * formative evaluation in educational design research * challenges in educational design research	4
MLT915	Digital Game-Based Learning	<p>The course will deal with digital games and theories of play that can support digital game-based learning. Students will be exposed to different approaches to the use of digital games to support teaching and learning together with their underlying theoretical bases. They will also learn through a substantial game-based learning group project.</p> <p>The specific topics include: Digital games for education Theories of play for conceptualising digital games Theories of learning for conceptualising game-based learning Game-Based learning and Gamification Design for learning with digital games</p> <p>Students are required to spend at least 3 hours in course readings and class preparation each week.</p>	4

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MLT916	Learning Analytics for Educational Practitioners	<p>This course is designed for educational practitioners, particularly MEd (LST) students, who are interested in the theoretical foundations and applications of learning analytics across educational areas (e.g., primary to tertiary students, adult-learning). Activities will include in-class discussions, designs, and presentations, all of which are intended to help students build up a strong foundation in understanding the theoretical and educational use of learning analytics for teaching and learning. Participants will be able to engage with theories presented in the readings as well as to connect learned content to their own teaching practices; guided with learning from case studies and reviews. The course will help to enhance learners’ educational data literacy as well as their assessment literacy.</p>	4
MLT917	Artificial Intelligence for Education: A Pedagogical Spectrum	<p>Modern artificially intelligent systems for education (AIED) embody various pedagogical models to scaffold participants’ learning, each of which holds different implications for how the technology is designed and what kind of data is generated. This seminar-based course will showcase concrete use-cases of AI systems for education that are aligned with pedagogies such as mastery, inquiry learning, collaborative learning, socio-emotional learning, embodied learning, and demonstrate how they work and what their limitations are. By showcasing how these different learning possibilities can be created with AI-enabled technology, the course will enculturate participants into the practice of teaching with technology for active learning to create more participatory, connected and reflective classrooms. Taken together, in strong alignment with MOE’s most recent EdTech masterplan 2030, this course will strengthen participants’ proficiency in e-pedagogies and their know-how of cutting-edge practices for creating and critiquing technology-enabled learning experiences drawing on artificial intelligence for education.</p>	4