UNIVERSITI SAINS MALAYSIA

PUSAT PENGAJIAN ILMU PENDIDIKAN
SCHOOL OF EDUCATIONAL STUDIES

INSTRUCTIONAL PLANNING

SEMESTER I
ACADEMIC SESSION 2019/2020

A. COURSE INFORMATION

Course Code	:	PGT 212E
Course Title	:	Mathematics Teaching Methods I
Day	:	Tuesday
Time	:	8.00 a.m. - 10.00 a.m.
Place	:	Mathematics Teaching Room
Coordinators/Lecturers	:	Dr. Wun Thiam Yew Associate Prof. Dr. Chew Cheng Meng Dr. Muzirah Musa
Guest Lecturer	:	-
No. of Students	:	30
Credit Units	:	3

B. COURSE OBJECTIVES

The objectives of the course are: to familiarize students with the aim and objectives of the Mathematics KSSM; to train students and future teachers in planning and preparing good mathematics teaching units/lessons for various learning environments that promote higher order thinking skills; to enhance students' understanding of different teaching strategies and techniques employed in classroom mathematics teaching; to provide opportunities for students to practise simulated teaching with their peers through tutorial sessions; and to develop students' confidence and skills in teaching mathematics in secondary schools.

C. LECTURE SCHEDULE

WEEK/DATE	TITLE	LECTURER	NOTES
1 [10-9-2019]	L1: Course outline and overview	WTY	
2 [17-9-2019]	L2 Mathematics KSSM	WTY	
3 [24-9-2019]	L3: Planning for mathematics instruction `	CCM	
4 [1-10-2019]	L4: Teaching of mathematical concepts	WTY	
5 [8-10-2019]	L5: Teaching of mathematical skills	WTY	
6 [15-10-2019]	L6: Mathematics teaching approaches	WTY	
7 [22-10-2019]	L7: Assessment in mathematics	MM	
8 [29-10-2019]	Mid-semester break		
9 [5-11-2019]	L8: Theories of learning mathematics	CCM	
10 [12-11-2019]	L12: Problem solving in mathematics	CCM	
11 [19-11-2019]	L10: Integration of ICT in mathematics teaching and learning	CCM	
12 [26-11-2019]	L11: Teaching and learning materials for mathematics	MM	
13 [3-12-2019]	L9: Issues and challenges in mathematics teaching and learning	MM	
14 [10-12-2019]	L13: Misconceptions in mathematics	MM	
15 [17-12-2019]	L14: Summary and reflections	WTY	
16 [24-12-2019]	Revision week		

L: Lecture

CCM: Associate Prof. Dr. Chew Cheng Meng MM: Dr. Muzirah Musa WTY: Dr. Wun Thiam Yew

D. REFERENCES

Ashlock, R. B. (1982). *Errror patterns in computation.* Merrill: Columbus, Ohio.

Bloomfield, A. & Harries, T. (Eds.) (1995). *Teaching, learning and mathematics – with IT.* UK: Association of Teachers of Mathematics. *fLB1646 G7 T253*

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Ernest, P. (1989). *Mathematics teaching: the state of the art*. London: Falmer Press.

Heddens, J. W., & Speer, W. R. (2006). *Today's mathematics: Concepts, classroom methods, and instructional activities (11th ed.).* NJ: John Wiley & Sons.

Hersh, R. (1997). *What is mathematics, really?* London : Jonathan Cape

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Johnson, Donovan A. & Gerald R.R. (1972). *Guidelines for Teaching Mathematics.* London: Cambridge University Press.

Johnson-Wilder, S., Johnson-Wilder, P., Pimm, D., & Westwell, J. (Eds.) (2004). *Learning to teach mathematics in the secondary school (2nd ed.).* London: RoutledgeFalmer.

Kelman et.al. (1992). *Computers in teaching mathematics*. Dale Seymour Publications:

Larcombe, A. (1985). *Mathematical learning difficulties in the secondary schools*. Milton Keynes: Open University Press.

Lim Chap Sam, Fatimah Saleh dan Munirah Ghazali (2003). *Bahan Bantu Mengajar Matematik*, PTS Publications

National Council of Teachers of Mathematics (NCTM) (1989). *Curriculum and evaluation standard for school mathematics*. Reston, VA: The Council.

Nik Azis Nik Pa (1995). *Penghayatan Matematik KBSR dan KBSM: Agenda tindakan.* Dewan Bahasa dan Pustaka, Kementerian Pendidikan Malaysia, Kuala Lumpur.

Noor Shah Saad (2001). *Teori dan Perkaedahan Pendidikan Matematik*. Petaling Jaya: Prentice Hall.

Noraini Idris (2001). *Pedagogi dalam pendidikan matematik.* Kuala Lumpur: Utusan Publications & Distributors Sdn. Bhd.

Sheffield, L. J. & Cruikshank, D. E. (2005). *Teaching and Learning Mathematics Preschool Through Middle School* (5th ed.). USA: John Wiley & Sons Inc.

Sobel, M.A. & Maletsky, E. M. (1988).*Teaching Mathematics: A Sourcebook of Aids, Activities and Strategies*.: Prentice Hall Inc. Eaglewood Cliff New Jersey.

Sue Johnson-Wilder, Peter Johnson-Wilder, David Pimm & John Westwell (Eds.) (1999). *Learning to teach mathematics in the secondary school*. London: Routledge. *LB1645 L438.*

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Van de Walle, J. A. (2004). *Elementary and middle school mathematics: Teaching developmentally (5th ed.).* Boston: Allyn & Bacon.

William J. Masalski (1992). *How to use the spreadsheet as a tool in the secondary school mathematics classroom*. Dale Seymour.

Journals :

Berita Matematik, Pusat Perkembangan Kurrikulum, Kementerian Pendidikan Malaysia.
Journal for Research in Mathematics Education, NCTM, U.S.A.

Journal of Science and Mathematics Education in Southeast Asia, RECSAM, Penang.

Mathematics Teaching, Association of Teachers of Mathematics (ATM), England.

School Science and Mathematics, School Science and Mathematics Association (SSMA), U.S.A.

The Arithmetic Teacher, NCTM, U.S.A.

The Mathematics Teachers, NCTM, U.S.A.

Classroom Teacher, RECSAM, Penang Teaching Children Mathematics, NCTM, U.S.A Publication.
Websites : The Math Forum http://mathforum.com/ Problems of the Week http://mathforum.com/pow/ Mathematics Library http://mathforum.com/library/ Teacher2Teacher http://mathforum.com/t2t/ Discussion Groups http://mathforum.com/discussions/ EXPLOREMATH.COM – Third Millennium Press http://www.exploremath.com/ NUMERACY: http://forum.swarthmore.edu/epigone/numeracy/

E. TUTORIAL SCHEDULE

WEEK/DATE	TITLE	TUTOR	NOTES
3 [23-9-2019]	T1: Ice breaking / Preparing lesson plan	CCM / WTY	
4 [30-9-2019]	T2: Presentation of Group 1 and discussion	CCM / WTY	
5 [7-10-2019]	T3: Presentation of Group 2 and discussion	CCM / WTY	
6 [14-10-2019]	T4: Presentation of Group 3 and discussion	CCM / WTY	
7 [21-10-2019]	T5: Presentation of Group 4 and discussion	CCM / WTY	
8 [28-10-2019]	Mid-semester break		
9 [4-11-2019]	T6: Presentation of Group 5 and discussion	CCM / WTY	
10 [11-11-2019]	T7: Presentation of Group 6 and discussion	CCM / WTY	
11 [18-11-2019]	T8: Presentation of Group 7 and discussion	CCM / WTY	
12 [25-11-2019]	T9: Presentation of Group 8 and discussion	CCM / WTY	
13 [2-12-2019]	T10: Presentation of Group 9 and discussion	CCM / WTY	
14 [9-12-2019]	T11: Presentation of Group 10 and discussion	CCM / WTY	
15 [16-12-2019]	T12: Presentation of Group 11 and discussion	CCM / WTY	

F. COURSE EVALUATION

COURSE WORK (50 %)

Mode	Weighting	Deadline
Review of journal article	10%	4 November 2019
Project	20%	One week after presentation
Tutorial presentation	20%	During tutorials

Notes:

1. Review of journal article (10%)
Students are required to read some journal articles related to mathematics education and write a review on a selected article. The review should consist of a summary of the article (5%) and a personal evaluation of the article (5%). The typewritten review should not exceed two pages of 1.5 spacing on A4-size paper using Times New Roman, font size 12 and properly bound.

2. Project (20%)
Students are required to work in pairs. Each pair will choose a topic from the secondary school mathematics curriculum and prepare a complete 30-minute mathematics lesson plan for teaching. Evaluation will be based on:

a) appropriateness of the induction set (4%);
b) logical sequence of the lesson development (4%);
c) creative and effective use of teaching and learning materials and/or ICT (4%);
d) appropriateness of the closure (4%); and
e) critical reflections (4%).

All comments and feedback during tutorial discussions should be taken into consideration when making modifications and/or improvement to the lesson plan. The lesson plan should be typewritten, double spacing on A4-size paper using Times New Roman, font size 12 and properly bound.

3. Tutorial presentation (20%)
Tutorial presentation consists of **individual teaching (10%)** and **individual participation in discussions (10%)**. Every student in each pair is required to teach the assigned topic according to the lesson plan as scheduled. Evaluation of the individual teaching will be based on:

a) content knowledge (3%);
b) effectiveness of the teaching (3%);
c) communication (2%); and
d) confidence (2%).

During each teaching, students are required to participate actively by observing and evaluating the lesson. After teaching, every student has to give comments and suggestions on the lesson observed to further improve the lesson. In order to play an active role in each discussion, students are required to study the topic before the tutorial. Evaluation of the individual participation in all discussions will be based on critical comments and suggestions to further improve the lessons (10%).

Final Examination (50 %)