SCHOOL OF EDUCATIONAL STUDIES

INSTRUCTIONAL PLANNING

SEMESTER II
ACADEMIC SESSION 2019/2020

A. COURSE INFORMATION

Course Code	:	PGT312E
Course Title	:	Mathematics Teaching Methods II
Day	:	Friday
Time	:	3.00 p.m. – 5.00 p.m.
Place	:	Mathematics Teaching Room
Coordinator/Lecturer	:	Dr. Wun Thiam Yew Associate Prof. Dr. Chew Cheng Meng Dr. Muzirah Musa
No. Of Student	:	28
Credit Units	:	3

B. COURSE OBJECTIVES

This course aims to develop pre-service mathematics teachers' mathematics teaching strategies and skills as well as mastery of mathematics contents, especially topics in the upper secondary mathematics curriculum and advanced topics in mathematics such as calculus, trigonometry, algebra, statistics and probability through group and individual projects that promote higher order thinking skills. Emphasis is placed on development of mathematical thinking and communication, integrating ICT in mathematics teaching and learning, diagnostic processes for misconceptions and remedial in mathematics. This course will also expose students to issues and current problems in mathematics education, based on the latest researches in Malaysia and abroad such as cross-national comparison of mathematics curriculum and effective mathematics teacher professional development programme.

C. LECTURE SCHEDULE

WEEK/DATE	TITLE	LECTURER	NOTES
1 [21.2.2020]	L1: Course outline and overview	WTY	
2 [28.2.2020]	L2: Evaluation of mathematics teaching	WTY	
3 [6.3.2020]	L3: Assessment of mathematics learning	WTY	
4 [13.3.2020]	L4: Process standards for school mathematics	MM	
5 [20.3. 2020]	L5: Geometrical thinking	CCM	
6 [27.3.2020]	L6: Teaching and learning of mathematics through mathematical modeling	WTY	
7 [3.4.2020]	L7: Best practices and innovations in teaching and learning of mathematics	MM	
8 [10.4.2020]	Mid Semester Break		
9 [17.4.2020]	L8: Application of The Geometer's Sketchpad in mathematics teaching & learning	CCM	
10 [24.4.2020]	L9: Application of Graphic Calculator in mathematics teaching & learning	CCM	
11 [1.5.2020]	L10: Application of SMARTBoard in mathematics teaching & learning	CCM	
12 [8.5.2020]	L11: Teaching and learning of mathematics through problem solving	MM	
13 [15.5.2020]	L12: Principles for school mathematics	MM	
14 [22.5.2020]	L13: Remediation in mathematics	WTY	
15 [29.5.2020]	L14: Summary and reflections	WTY	

L: Lecture

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

D. REFERENCES

Alfred S. Posamentier, Herbert A. Hauptman (2006). *101+ Great Ideas for Introducing Key Concepts in Mathematics: A Resource for Secondary School Teachers* (Paperback) Corwin Press.

Ashlock, R. B. (1982). *Errror pattern 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]

Baroody, A. J. (1993). *Problem Solving, Reasoning, and Communicating, K-8.* New York: Macmillan Publishing Company. [QA135.5 B267]

Elliot, P. C & Kenny, M. J. (1996). *Communication in Mathematics, K-12 and Beyond.* Reston, The National Council of Teachers of Mathematics. [QA11 C734 1996]

Judith A. Muschla, Gary Robert Muschla (2003).*Algebra Teacher's Activities Kit: 150 Ready-to-Use Activitites with Real World Applications (*Paperback) John Wiley & Son.

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

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, Virginia: Author.

National Council of Teachers of Mathematics (NCTM) (2000). *Principles and Standards for School Mathematics*. Reston, Virginia: Author.

Nik Azis Nik Pa (1992). *Penghayatan Matematik*. 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.

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

Stigler J. W. & Hiebert, J. (1999). *The Teaching Gap: Best Ideas from the World's Teachers for Improving Education in the Classroom.* The Free Press.

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

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

Websites:

The Math Forum http://mathforum.com/
Ask Dr. Math http://mathforum.com/dr.math/
Problems of the Week http://mathforum.com/pow/
Mathematics Library http://mathforum.com/library/
Teacher2Teacher http://mathforum.com/t2t/
NCTM standard: http://www.nctm.org/standards/

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 Teacher, NCTM, U.S.A.
Classroom Teacher, RECSAM, Penang.
Teaching Children Mathematics, NCTM, U.S.A.

E. TUTORIAL SCHEDULE

WEEK/DATE	TITLE	TUTOR	NOTES
3 [2.3.2020]	T1: Ice breaking / Preparing lesson plan	WTY	
4 [9.3. 2020]	T2 : Presentation of Group 1 and discussion	WTY	
5 [16.3. 2020]	T3: Presentation of Group 2 and discussion	WTY	
6 [23.3. 2020]	T4: Presentation of Group 3 and discussion	WTY	
7 [30.3. 2020]	T5: Presentation of Group 4 and discussion	WTY	
8 [6.4. 2020]	Mid-semester break		
9 [13.4. 2020]	T6: Presentation of Group 5 and discussion	WTY	
10 [20.4. 2020]	T7: Presentation of Group 6 and discussion	WTY	
11 [27.4. 2020]	T8: Presentation of Group 7 and discussion	WTY	
12 [4.5. 2020]	T9: Presentation of Group 8 and discussion	WTY	
13 [11.5. 2020]	T10: Presentation of Group 9 and discussion	WTY	
14 [18.5. 2020]	T11: Presentation of Group 10 and discussion	WTY	
15 [25.5. 2020]	T12: Presentation of Group 11 and discussion	WTY	

T: Tutorial

WTY: Dr. Wun Thiam Yew

F. COURSE EVALUATION

COURSE WORK (50%)

Mode	Weighting	Deadline
1. Brief report	10%	13 April 2020
2. Project	20%	One week after presentation
3. Tutorial presentation	20%	During tutorials

Notes:

1. Brief report (10%)

Each student will be assigned a topic from the Form 4 or 5 Additional Mathematics syllabus. You are required to search from the internet or other sources, **TWO activities** that can be used to introduce/develop the topic assigned. Write out a brief report (2 pages) to include the following:

a) Topic
b) Learning outcome.
c) Rationale for choosing each activity.
d) Brief comments on the effectiveness of each activity used to introduce/develop the topic assigned.
e) Suggestions for improvements.
f) References.

2. Project (20%)

Students are required to work in small groups. Each group will be assigned a topic from the Form 4 or 5 Mathematics syllabus and prepare a complete 30-minute mathematics lesson plan for teaching. Evaluations will be based on:

a) appropriateness of the induction set;
b) sequence of the lesson development; and
c) creative and effective use of teaching and learning materials and/or ICT.

All comments and suggestions during tutorial discussions should be taken into consideration when making modifications and/or improvement to the lesson plan. The reflections of each member of the group should be included in the final version of the lesson plan.

3. Tutorial presentation (20%)

Every student in each group is required to teach the assigned topic according to the lesson plan as scheduled. During each presentation, students are required to participate actively by observing and evaluating the lesson. After presentation, every student has to give comments and suggestions on the lesson observed to further improve the lesson.

Final Examination (50%)