



TQF.3 Course Specification

Course Code : MTP5105

Course Title: Philosophy and Mathematics Curriculum
Development

Credits: 3(3-0-6)

Semester /Academic Year : 1/2016

Students : Master of Arts Program in Mathematics Education

Lecturers : Assoc. Prof. Chaweewan Kaewsaiha
Dr.Boonthong Boontawee

International College, SuanSunandhaRajabhat University

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Section 1 General Information

1. Code and Course Title: MTP5105 Philosophy and Mathematics

Curriculum Development

2. Credits:3(3-0-6)

3. Curriculum and Course Category :

This course of Master of Arts ,International College, SSRU is categorized in *Requirement Course: Cluster in International Teaching Profession* .

4. Lecturers:

Assoc.Prof.Chaweewan Kaewsaiha

Dr.Boonthong Boontawee

5. Year / Semester

Graduate Student Year 1 / Semester 1/2016

6. Prerequisite Course

None

7. Co-requisite Course :

None

8. Learning Location

Building Number :21

Monday 13.00 – 16.00 Room No. 2122

9. Last Date for Preparing and Revising this Course:

May 15, 2016

Section 2 Objectives and Purposes

1. Course Objectives

At the end of this course, the student will be able to perform in the following areas of performance :

- (1) Able to analyze mathematics curriculum, the content of each objective so that instructional strategies match content and assessment;
- (2) Able to improve and develop diverse curricula based on providing appropriate educational experiences at the appropriate level to ensure maximum student achievement;
- (3) Able to evaluate curriculum both before and after implementation include scope and sequence, objectives to be taught, assessments, aligned resources, time frame and instructional strategies;
- (4) Able to establish curriculum using a standard-based approach derived from institutions, communities, and national needs.

2. Purposes for Developing / Revising Course (content / learning process / assessment / etc.)

According to TQF (Thailand Quality Framework: HEd.) and the Teachers' Council of Thailand with the standards of professional knowledge and experience for requirement courses, graduate students program in mathematics education should have essence of knowledge and competencies in philosophy and curriculum development consisting of :

Essence of Knowledge

- (1) Philosophy, concepts and theory of education;
- (2) Background and educational administration system in Thailand;
- (3) Vision and development plan for education in Thailand;

- (4) Curriculum theory;
- (5) Curriculum development
- (6) Curriculum standards and intended levels;
- (7) Curriculum development for educational institutions;
- (8) Problems and trend of curriculum development.

Competencies

- (1) Able to analyze curriculum;
- (2) Able to improve and develop diverse curricula;
- (3) Able to evaluate curriculum both before and after implementation;
- (4) Able to establish curriculum.

Section 3 Course Structure

1. Course Outline

Educational philosophy and curriculum theory; Relationship between curriculum and instruction; Curriculum standards and intended levels; Factors and Conditions for Curriculum Design and Development: Educational system in Thailand, Vision and development plan for education in Thailand, National Education Act, Political and economic; Problems and trend of curriculum development: Impediments of change, Nature and scope of stake-holders involvement.

2. Time Length per Semester (Lecture – hours / Practice – hours / Self Study – hours)

| Lecture | Practice/ Field Work/Internship | Self Study | Remedial Class |
|----------------|--|-------------------|---------------------------|
| 48 hours | - | 96 hours | 3+ (if any) |

3. Time Length per Week for Individual Academic

Consulting and Guidance

1 hour / week

Section 4 Developing Student's Learning Outcomes

| Learning Standards/Outcomes | Learning Activities | Learning Assessment |
|--|--|--|
| <p>1. Ethics and Morals</p> <p>To have ethic behavior (personal responsibility , corporate responsibility) and moral reasoning.</p> | <p>Work in group to discuss on philosophy and psychology aspects of teachers and teaching; and their impact on teachers' skills and attitudes.</p> | <p>Group discussion Report</p> |
| <p>2. Knowledge</p> <p>2.1 To analyze mathematics curriculum.</p> <p>2.2 To improve and develop diverse curricula.</p> <p>2.3 To evaluate curriculum both before and after implementation</p> <p>2.4 To establish curriculum.</p> | <p>1. Introduce the educational philosophy and curriculum theory; Factors and Conditions for Curriculum Design and Development.</p> <p>2. Compare and contrast among perspectives on national education and universal education system.</p> <p>3. Have the students develop their plans to establish mathematics</p> | <p>1. Term papers 2. Group report presentation</p> |

| Learning Standards/Outcomes | Learning Activities | Learning Assessment |
|---|---|--|
| | curriculum and curriculum evaluation. | |
| <p>3. Cognitive Skills</p> <p>3.1 Have ability to search for knowledge : research on teaching and learning mathematics .</p> <p>3.2 Have analytical thinking : analyze intended mathematics curriculum, sources of pedagogy, and their impact on teachers’ knowledge, skills, and attitudes.</p> | <p>1. Use research-based learning and internet-based learning to construct cognitive skills in solving mathematics classroom problems.</p> <p>2. Discussion and presentation of research findings – students write reports, and other forms of work documentation to include in their portfolios or oral presentation their findings from discussion / searching information.</p> | <p>1. Individual portfolio</p> <p>2. Term papers</p> <p>3. Group report presentation</p> |
| <p>4. Interpersonal Skills and Responsibilities</p> <p>4.1 Have responsibility for assignment : select ideas in education from different theoretical perspectives, application to Thailand and other countries.</p> <p>4.2 Can adjust to work in team both as leader or follower.</p> | <p>1. Use research-based learning and internet-based learning on socio-economic analysis of policy issues in education impact on curriculum development.</p> <p>2. Students work in group of five. They plan to use PBL technique to search information demonstrate interpersonal skills and responsibility in a variety of socio-economic</p> | <p>1. Term papers</p> <p>2. Group report presentation</p> |

| Learning Standards/Outcomes | Learning Activities | Learning Assessment |
|------------------------------------|--|----------------------------|
| | analysis in educational policy making. | |

| Learning Standards/Outcomes | Learning Activities | Learning Assessment |
|---|---|--|
| <p>5. Numerical Analysis, Communication and Information Technology Skills</p> <p>5.1 Have statistical and mathematical skills to present research finding on mathematics curriculum development.</p> <p>5.2 Can use correct language in oral and written presentations.</p> <p>5.3 Can use computer and IT to follow the progress of philosophy and curriculum development for mathematics teachers.</p> | <p>1. Use research-based learning and internet-based learning to analyze national curriculum imply to mathematics class.</p> <p>2. Students work in group of five. They plan to use technology to analyze data and present their report both in oral and written.</p> | <p>1. Individual portfolio</p> <p>2. Term papers</p> <p>3. Group report presentation</p> |
| <p>6. Learning Management Skills</p> <p>6.1 Be able to design learning activities and learning environments within the context of a unit of mathematics and real world.</p> | <p>1. Use basic techniques for learning management skills: integration of contents for learning group, integration for group learning, and learner-oriented learning management.</p> | <p>1. Individual portfolio</p> <p>2. Term papers</p> <p>3. Group report presentation</p> |

| | | |
|--|--|--|
| <p>6.2 Be able to develop the learners with essential opportunities to enhance learning concepts and motivate active engagement in mathematical process for problem solving.</p> | <p>2. Discussion and presentation of curriculum theory and research on the learning of mathematics, development of mathematical thinking and knowledge in school and other settings.</p> | |
|--|--|--|

Section 5 Lesson Plan and Assessment

1. Lesson Plan

| Week | Topic/Outline | Hours | Learning Activities and Medias |
|------|---|-------|---|
| 1-2 | <p>Unit 1 Educational philosophy and curriculum theory : Influences of philosophy, learning theory, and sociology on the curriculum.</p> | 6 | <p>1. Introduce the relevance of philosophy to mathematics curriculum by teaching students how to find information and challenge them to synthesis and evaluate the information they find.</p> <p>2. Students work with a group to discuss about curriculum and instruction with an emphasis on philosophy, learning theory, and sociology.</p> |
| 3 | <p>Unit 2 Relationship between curriculum and instruction : An integrative approach to curriculum (unites core academic subjects, interdisciplinary themes), Integrative approach to instruction</p> | 3 | <p>1. Introduce the ties between learning theory and instructional design by emphasizing the importance of meaningful, authentic activities that help the students construct understandings and</p> |

| | | | |
|-------------|---|--------------|---|
| | (modern pedagogies, technologies), | | skills relevant to modern real situations. 2. Students work with a group to discuss about integrated curriculum for gifted learners. |
| Week | Topic/Outline | Hours | Learning Activities and Medias |
| 4 | Unit 3 Curriculum Standards,Rational for standards, learnercharacteristics,academic contents | 3 | 1. Introduce standard-based curriculum 2. Students discuss about clarity of learning expectations, academic content of school programs, and educational equity by using issues for curriculum development. |
| 5 | Unit 4 Factors and conditions for curriculum design and development : People and roles in curriculum work, design alternatives and needsassessments; selecting, sequencing, organizing, and prioritizing content | 3 | 1. Introduce factorsand conditions for curriculum design and development. 2. Students discuss about national curriculum and implementation of curriculum to local levels and schools by using the samples of both types of curriculum. |
| 6 | Unit 5 Documenting and implementing curriculum : | 3 | 1. Introduce criteria for determining document quality, selected examples of types of curriculum documents, and use |

| | | | |
|---|--|---|--|
| | Establishing and evaluating curriculum | | of interrelated curriculum documents to manage programs 2. Students discuss about how to establish and evaluate curriculum. |
| 7 | Mid-Term Examination | 3 | Paper-Test |

| Week | Topic/Outline | Hours | Learning Activities and Medias |
|-------------|---|--------------|---|
| 8-10 | Unit 6 Theory and Research in Curriculum and Instructional Design | 9 | 1. Introduce theory and research about curriculum and instruction by using internet-based, research documents and discussion. 2. Students work in a group about curriculum and instructional design. |
| 11-13 | Unit 7 Theory and Research in Curriculum and Instructional Design in Mathematics | 9 | 1. Introduce theory and research about designing curriculum and diversity instruction in mathematics by using internet-based/research documents and discussion. 2. Students work in a group to discuss about curriculum and instructional design in mathematics. |

| | | | |
|-----------------------|---|-----------|--|
| 14-15 | Unit 8 Research in Implementing Mathematics Curriculum | 6 | 1. Students present interesting curriculum design model for learning mathematics. 2. Prepare data based for research proposal individually. |
| 16 | Final Examination | 3 | Paper-Test |
| Total of Hours | | 48 | |

Remark :Reserve 1 – 2 weeks for searching related topics.

2. Learning Assessment Plan

| Learning Outcomes | Assessment Activities | Time Schedule (Week) | Proportion for Assessment (%) |
|--|--|-----------------------------|--------------------------------------|
| <p>1. Ethics and Morals</p> <p>To have ethic behavior (personal responsibility , corporate responsibility) and moral reasoning.</p> | <p>1.Individual portfolio</p> <p>2.Group discussion</p> | <p>Throughout semester</p> | <p>5 %</p> |
| <p>2. Knowledge</p> <p>2.1 To analyze mathematics curriculum.</p> <p>2.2 To improve and develop diverse curricula.</p> <p>2.3 To evaluate curriculum both before and after implementation</p> <p>2.4 To establish curriculum.</p> | <p>1.Term papers</p> <p>2.Group report presentation</p> | <p>Throughout semester</p> | <p>40 %</p> |
| <p>3. Cognitive Skills</p> <p>3.1 Have ability to search for knowledge : research on teaching and learning mathematics .</p> | <p>1. Individual portfolio</p> <p>2. Term papers</p> <p>3. Group report presentation</p> | <p>Throughout semester</p> | <p>30 %</p> |

| Learning Outcomes | Assessment Activities | Time Schedule (Week) | Proportion for Assessment (%) |
|--|--|-----------------------------|--------------------------------------|
| 3.2 Have analytical thinking : analyze intended mathematics curriculum, sources of pedagogy, and their impact on teachers' knowledge, skills, and attitudes. | | | |
| <p>4. Interpersonal Skills and Responsibilities</p> <p>4.1 Have responsibility for assignment : select ideas in education from different theoretical perspectives, application to Thailand and other countries.</p> <p>4.2 Can adjust to work in team both as leader or follower.</p> | <p>1. Checklists</p> <p>2. Interviews</p> | Throughout semester | 5 % |
| <p>5. Numerical Analysis, Communication and Information Technology Skills</p> <p>5.1 Have statistical and mathematical skills to present research finding on mathematics curriculum development.</p> | <p>1. Individual portfolio</p> <p>2. Term papers</p> <p>3. Group report presentation</p> | Throughout semester | 10 % |

| Learning Outcomes | Assessment Activities | Time Schedule (Week) | Proportion for Assessment (%) |
|---|---|-----------------------------|--------------------------------------|
| <p>5.2 Can use correct language in oral and written presentations.</p> <p>5.3 Can use computer and IT to follow the progress of philosophy and curriculum development for mathematics teachers.</p> | | | |
| <p>6. Learning Management Skills</p> <p>6.1 Be able to design learning activities and learning environments within the context of a unit of mathematics and real world.</p> <p>6.2 Be able to develop the learners with essential opportunities to enhance learning concepts and motivate active engagement in mathematical process for problem solving.</p> | <ol style="list-style-type: none"> 1. Individual portfolio 2. Term papers 3. Group report presentation | <p>Throughout semester</p> | <p>10 %</p> |

Section 6 Learning and Teaching Resources

1. Textbook and Main Documents

Armstrong, David G.(2003). **Curriculum Today**. Ohio: Merrill
Prentice Hall.

Ministry of Education. (2008). **Basic Education Core Curriculum
B.E.2551 (A.D.2008)**.Bangkok: The Agricultural Co-
operative Federation of Thailand, Ltd.

2. Important Documents for Extra Study

National Council of Teachers of Mathematics. (2006). **Curriculum
Focal Points for Prekindergarten through Grade 8
Mathematics**.VA: NCTM, Inc.

3. Suggestion Information (Printing Materials/Website/CD/ Others)

Ruamrudee International School.(2004). Program of Studies 2004 –
2005.

Japan Society of Mathematical Education. (2000). Mathematics
Program in Japan: Elementary, Lower Secondary & Upper
Secondary Schools.

Section 7 Course Evaluation and Revising

1. Strategies for Course Evaluation by Students

Using survey questions to collect information from the students' opinions to improve the course and enhance the curriculum. Examples of questions:

- (1) Content objectives were made clear to the students.
- (2) The content was organized around the objectives.
- (3) Content was sufficiently integrated.
- (4) Content was sufficiently integrated with the rest of the first year curriculum.
- (5) The instructional materials used were effectively.
- (6) The learning methods appropriate assessed the students' understanding of the content.
- (7) Overall, Students are satisfied with the quality of this course .
..... etc.

2. Strategies for Course Evaluation by Lecturer

2.1 Lecturers team observe the class and discuss the results as

follow:

- (1) The lecturer is well prepared for class sessions.
- (2) The lecturer answers questions carefully and completely.
- (3) The lecturer uses examples to make the materials easy to understand.
- (4) The lecturer stimulated interest in the course.
- (5) The lecturer made the course material interesting.
- (6) The lecturer is knowledgeable about the topics presented in this course.
- (7) The lecturer treats students respectfully.
- (8) The lecturer is fair in dealing with students.
- (9) The lecturer makes students feel comfortable about asking question.
- (10) Course assignment are interesting and stimulating.
- (11) The lecturer's use of technology enhanced learning in the classroom.
..... etc.

1.2 The director / head of program construct assessment items to evaluate four dimensions of lecturer's competencies : teaching skills, organization and presentation of materials, management of the learning environment, and teaching attitudes.

3. Teaching Revision

Lecturer revises teaching / learning process based on the results from the students' survey questions , the lecturer team's observation, and classroom research.

4. Feedback for Achievement Standards

International College Administrator Committee monitor to assessment process and Grading.

5. Methodology and Planning for Course Review and Improvement

(1) Revise and develop course structure and process every two years.

(2) Assign different lecturers teach this course to enhance students' performance.