



TQF.3

Bachelor's Degree

Master's Degree

Course Specification

Course Code: MTP5105

Course Title: Philosophy and Mathematics Curriculum
Development

Credits: 3(3-0-6)

Program: Master of Arts Program in Mathematics Education
(International Program)

International College
Suan Sunandha Rajabhat University
(SSRUIC)

Semester : 1

Academic Year : 2017

Section 1 General Information

1. Code and Course Title :

Course Code: MTP5105

Course Title (English): Philosophy and Mathematics Curriculum
Development

Course Title (Thai): ปรัชญาและการพัฒนาหลักสูตรคณิตศาสตร์

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

3. Curriculum and Course Category :

3.1 Curriculum: Master of Arts Program in Mathematics Education
(International Program)

3.2 Course Category:

General Education

Required Course

Elective Course

Others

4. Lecturer Responsible for Course and Instructional

Course Lecturer (s) :

4.1 Lecturer Responsible for Course:

Assoc.Prof.Chaweewan Kaewsaiha

4.2 Instructional Course Lecturer(s):

(1) Assoc. Prof. Chaweewan Kaewsaiha

(2) Dr.Boonthong Boontawee

5. Contact/Get in Touch

Building Number 21 Room Number 2121

Tel. 081-484-4361 E-mail chaweewan.ka@ssru.ac.th

6. Semester/ Year of Study

6.1 Semester: 1 Year of Study: 1

6.2 Number of the students enrolled: 3

7. Pre-requisite Course (If any)

None

8. Co-requisite Course (If any)

None

9. Learning Location

Building Number: 21 Room Number: 2122

10. Last Date for Preparing and Revising this Course:

Date: 25 Month: July Year: 2017

Section 2 Aims and Objectives

1. Course Aims

At the end of this course, the student will reach to six domains in the following areas of performance:

1.1 Morals and Ethics to be developed:

- (1) Have integrity, honesty and teaching profession ethics;
- (2) Have discipline, self and social responsibility;
- (3) Have awareness of actions affect other people.

1.2 Knowledge to be acquired:

- (1) Have knowledge of philosophy and curriculum development;
- (2) Have knowledge about the philosophy and mathematics curriculum in Basic Core Curriculum;
- (3) Have knowledge of the implementation of philosophy and mathematics curriculum to school setting.

1.3 Cognitive Skills to be developed:

- (1) Be able to analyze the components of philosophy and curriculum in Basic Core Curriculum;
- (2) Be able to compare Thai philosophy and mathematics curriculum to other countries;
- (3) Be able to describe pedagogy content knowledge for curriculum implementation.

1.4 Interpersonal Skills and Responsibility to be developed:

- (1) Have responsibility for assignment;
- (2) Can adjust to work in team both as leader or follower;
- (3) Have self-management and social awareness.

1.5 Numerical Analysis, Communication and Information Technology Skills to be developed:

- (1) Have statistical and mathematical skills to present research finding on mathematics curriculum development;
- (2) Can use correct language in oral and written presentations;
- (3) Can use computer and IT to follow the progress of philosophy and curriculum development for mathematics teachers.

1.6 Learning Management Skills to be developed:

- (1) Be able to design learning activities and learning environments within the context of a unit of mathematics and real world;
- (2) Be able to provide the learners with essential opportunities to enhance learning concepts and motivate active engagement in mathematical process in problem solving;
- (3) Be able to implement research-based, effective programs that prevent problems, enhance independence and promote optimal learning.

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

Using the Framework for 21st Century Learning process, students work to integrate supportive technologies, inquiry- and problem-based instructional approaches, and higher order thinking skills.

Section 3 Characteristics and Operation

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

ปรัชญาการศึกษาและทฤษฎีหลักสูตร ความสัมพันธ์ระหว่างหลักสูตรและการสอน มาตรฐานหลักสูตรและมาตรฐานหลักสูตรในระดับต่าง ๆ องค์ประกอบและเงื่อนไขสำหรับการ ออกแบบและพัฒนาหลักสูตร ระบบการศึกษาในประเทศไทย วิสัยทัศน์ และแผนการพัฒนา การศึกษาของประเทศไทย พระราชบัญญัติการศึกษาแห่งชาติ เศรษฐกิจและการเมือง ปัญหาและ แนวโน้มของการพัฒนาหลักสูตร ธรรมชาติและขอบข่ายของความเกี่ยวข้องของผู้มีส่วนได้เสีย

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

| Lecture (hours) | Remedial Class (hours) | Practice/ Field Work/ Internship (hours) | Self-Study (hours) |
|-----------------|------------------------|--|--------------------|
| 48 | 3 | - | 6 |

3. Time Length per Week for Individual Academic Consulting and Guidance

At least 1 hour per week

3.1 Self consulting at the lecturer's office:

Building Number: 21 Room Number: 2121

3.2 Consulting via office telephone/mobile phone: 081-484-4361

3.3 Consulting via E-Mail: chaweewan.ka@ssru.ac.th

Section 4 Developing Student's Learning Outcomes

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.

At the end of this course, the student will reach to six domains by applying the following teaching strategies and assessments:

1. Morals and Ethics

1.1 Morals and Ethics to be developed:

- (1) Have integrity, honesty and teaching profession ethics;
- (2) Have discipline, self and social responsibility;
- (3) Have awareness of actions affect other people.

1.2 Teaching Strategies

(1) Encourage the students to have integrity, honesty, and discipline such as unselfishness and self-control.

(2) Train the students to have characteristics of good characteristics with the teaching profession ethics.

1.3 Assessment Strategies

- (1) Authentic Assessment
- (2) Portfolio Assessment
- (3) Performance Assessment

2. Knowledge

2.1 Knowledge to be acquired:

- (1) Have knowledge of philosophy and curriculum development;
- (2) Have knowledge about the philosophy and mathematics curriculum in Basic Core Curriculum;
- (3) Have knowledge of the implementation of philosophy and mathematics curriculum to school setting.

2.2 Teaching Strategies

(1) Using brainstorming to encourage students generate a large number of ideas and using higher order thinking skills.

(2) Using problem-based learning, research-based learning, and computer-based learning to enhance students' knowledge.

2.3 Assessment Strategies

- (1) Using rubrics for complex authentic task
- (2) Using formative and summative tests
- (3) Using report writing and presentation

3. Cognitive Skills

3.1 Cognitive Skills to be developed:

- (1) Be able to analyze the components of philosophy and curriculum in Basic Core Curriculum;
- (2) Be able to compare Thai philosophy and mathematics curriculum to other countries;
- (3) Be able to describe pedagogy content knowledge for curriculum implementation.

3.2 Teaching Strategies

(1) Encourage the students develop their higher thinking skills such as providing diversity environments for students to construct and implement their knowledge.

(2) Using problem-based learning, research-based learning, and computer-based learning to enhance student's thinking skills.

3.3 Assessment Strategies

(1) Using rubrics for complex procedures of problem solving

(2) Using formative and summative tests

(3) Using report writing and presentation

4. Interpersonal Skills and Responsibilities

4.1 Interpersonal Skills and Responsibilities to be developed:

- (1) Have responsibility for assignment;
- (2) Can adjust to work in team both as leader or follower;
- (3) Have self-management and social awareness.

4.2 Teaching Strategies

(1) Using cooperative learning through interpersonal communication and interaction.

(2) Demonstrate the ability to apply appropriate interpersonal and teamwork skills in a variety of learning environments.

(3) Using problem-based learning, research-based learning, and computer-based learning to enhance students' experiences for further development their learning.

4.3 Assessment Strategies

(1) Using personality assessments

(2) Using rubrics for group work

- (3) Using report writing and presentation

5. Numerical Analysis, Communication and Information Technology Skills

5.1 Numerical Analysis, Communication and Information

Technology to be developed:

- (1) Have statistical and mathematical skills to present research finding on mathematics curriculum development;
- (2) Can use correct language in oral and written presentations;
- (3) Can use computer and IT to follow the progress of philosophy and curriculum development for mathematics teachers.

5.2 Teaching Strategies

- (1) Using problem-based learning
- (2) Using computer-based learning

5.3 Assessment Strategies

- (1) Using interviewing and observation
- (2) Using authentic task assessment
- (3) Using report writing and presentation

6. Learning Management Skills

6.1 Learning Management Skills to be developed:

- (1) Be able to design learning activities and learning environments within the context of a unit of mathematics and real world;
- (2) Be able to provide the learners with essential opportunities to enhance learning concepts and motivate active engagement in mathematical process for problem solving;
- (3) Be able to implement research-based, effective programs that prevent problems, enhance independence and promote optimal learning.

6.2 Teaching Strategies

- (1) Using real world problems within the classroom.
- (2) Using innovation approaches to reduce anxiety and negativity attitude in learning.
- (3) Using research-based learning to investigate the appropriate innovative in learning to prevent problems and promote optimal learning.

6.3 Assessment Strategies

- (1) Using authentic task assessment
- (2) Using report writing and presentation

Remark: Symbol ● means ‘major responsibility’
 Symbol ○ means ‘minor responsibility’

Section 5 Lesson Plan and Assessment

1. Lesson Plan

| Week | Topic/Outline | Periods | Learning Activities and Medias | Lecturer(s) |
|------|---|---------|---|---|
| 1-2 | Unit 1 Educational philosophy and curriculum theory: Influences of philosophy, learning theory, and sociology on the curriculum. | 6 | - Brainstorming - Video | Assoc.Prof. Chaweewan Dr.Boonthong Boontawee |
| 3 | Unit 2 Relationship between curriculum and instruction : An integrative approach to curriculum (unites core academic subjects, interdisciplinary themes), Integrative approach to instruction (modern pedagogies, technologies) | 3 | - Group work - Instructional Competence List | Assoc.Prof. Chaweewan Dr.Boonthong Boontawee |

| Week | Topic/Outline | Periods | Learning Activities and Medias | Lecturer(s) |
|-------------|--|----------------|--|---|
| 4 | Unit 3 Curriculum Standards, Rational for standards, learner characteristics, academic contents | 3 | - Internet-Based Learning - Competencies-Based Performance List | Assoc.Prof. Chaweewan Dr.Boonthong Boontawee |
| 5 | Unit 4 Factors and conditions for curriculum design and development : People and roles in curriculum work, design alternatives and needs assessments; selecting, sequencing, organizing, and prioritizing content | 3 | Oral Presentation | Assoc.Prof. Chaweewan Dr.Boonthong Boontawee |
| 6 | Unit 5 Documenting and implementing curriculum : Establishing and evaluating curriculum | 3 | - Research-Based Learning - Case Study | Assoc.Prof. Chaweewan Dr.Boonthong Boontawee |
| 7 | Mid-Term Examination | 3 | Paper Test | |
| 8-10 | Unit 6 Theory and Research in Curriculum and Instructional Design | 9 | - Discussion - Video | Assoc.Prof. Chaweewan Dr.Boonthong Boontawee |
| 11-13 | Unit 7 Theory and Research in Curriculum and Instructional Design in Mathematics | 9 | - Research-Based Approach - Video | Assoc.Prof. Chaweewan - Dr.Boonthong Boontawee |

| Week | Topic/Outline | Periods | Learning Activities and Medias | Lecturer(s) |
|----------------|---|--------------------------------------|--------------------------------------|---|
| 14-16 | Unit 8 Research in Implementing Mathematics Curriculum | 9 | - Research-Based Approach - Video | Assoc.Prof. Chaweewan Dr.Boonthong Boontawee |
| 17 | Final Examination | Take Home Test and Oral Presentation | | |
| Total of Hours | | 48 | | |

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

2. Learning Assessment Plan

| | Learning Outcome | Assessment Activities | Time Schedule (Week) | Proportion for Assessment (%) |
|---|---|--|----------------------|-------------------------------|
| 1 | Morals and Ethics (1) Have integrity, honesty and teaching profession ethics; (2) Have discipline, self and social responsibility; (3) Have awareness of actions affect other people. | (1) Authentic Assessment (2) Portfolio Assessment (3) Performance Assessment | Throughout Semester | 10 % |

| | Learning Outcome | Assessment Activities | Time Schedule (Week) | Proportion for Assessment (%) |
|---|---|--|-----------------------------|--------------------------------------|
| 2 | <p>Knowledge</p> <p>(1) Have knowledge of philosophy and curriculum development;</p> <p>(2) Have knowledge about the philosophy and mathematics curriculum in Basic Core Curriculum;</p> <p>(3) Have knowledge of the implementation of philosophy and mathematics curriculum to school setting.</p> | <p>(1) Using rubrics for complex authentic task</p> <p>(2) Using formative and summative tests</p> <p>(3) Using report writing and presentation</p> | Throughout Semester | 40 % |
| 3 | <p>Cognitive Skills</p> <p>(1) Be able to analyze the components of philosophy and curriculum in Basic Core Curriculum;</p> <p>(2) Be able to compare Thai philosophy and mathematics curriculum to other countries;</p> | <p>(1) Using rubrics for complex procedures of problem solving</p> <p>(2) Using formative and summative tests</p> <p>(3) Using report writing and presentation</p> | Throughout Semester | 30 % |

| | Learning Outcome | Assessment Activities | Time Schedule (Week) | Proportion for Assessment (%) |
|---|--|--|-----------------------------|--------------------------------------|
| | (3) Be able to describe pedagogy content knowledge for curriculum implementation. | | | |
| 4 | Interpersonal Skills and Responsibilities (1) Have responsibility for assignment; (2) Can adjust to work in team both as leader or follower; (3) Have self-management and social awareness. | (1) Using personality assessments (2) Using rubrics for group work (3) Using report writing and presentation | Throughout Semester | 5 % |
| 5 | Numerical Analysis, Communication and Information Technology Skills (1) Have statistical and mathematical skills to present research finding on mathematics curriculum development; (2) Can use correct language in oral and written presentations; | (1) Using interviewing and observation (2) Using authentic task assessment (3) Using report writing and presentation | Throughout semester | 10 % |

| | Learning Outcome | Assessment Activities | Time Schedule (Week) | Proportion for Assessment (%) |
|----------|--|---|-----------------------------|--------------------------------------|
| | (3) Can use computer and IT to follow the progress of philosophy and curriculum development for mathematics teachers. | | | |
| 6 | <p>Learning Management Skills</p> <p>(1) Be able to design learning activities and learning environments within the context of a unit of learning and real world;</p> <p>(2) Be able to provide the learners with essential opportunities to enhance learning concepts and motivate active engagement in learning;</p> <p>(3) Be able to implement research-based, effective programs that prevent problems, enhance independence and promote optimal learning.</p> | <p>(1) Using authentic task assessment</p> <p>(2) Using report writing and presentation</p> | Throughout semester | 20 % |

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.

2.2 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 (TQF.5).

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.

Curriculum Mapping Illustrating the Distribution of Program Standard Learning Outcomes to Course Level

| Courses | 1. Morals and Ethics | | | 2. Knowledge | | | 3. Cognitive Skills | | | 4. Interpersonal Skills and Responsibility | | | 5. Numerical Analysis, Communication and Information Technology Skills | | | 6. Learning Management Skills | | |
|---|------------------------|---|---|--------------|---|---|---------------------|---|---|--|---|---|--|---|---|-------------------------------|---|---|
| | ● Major Responsibility | | | | | | | | | ○ Minor Responsibility | | | | | | | | |
| Course Category: Requirement Course-- Teaching Profession Core Course | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 |
| Course Code: MTP5105 Course Title: Philosophy and Mathematics Curriculum Development | ● | ○ | ○ | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |