**New York City College of Technology**

**The City University of New York**

**DEPARTMENT: Mathematics**

**PREPARED BY:** Andrew Vaughn (Fall 2023)

**COURSE: MEDU 1021**

**TITLE**: Teaching and Learning Strategies for Mathematics Teachers

**DESCRIPTION**: Students explore a wide variety of teaching and learning strategies in mathematics while incorporating innovative technologies. These strategies include oral and written communication, quantitative literacy and numeracy, active learning, collaborative learning, critical thinking, library research, and technology utilization. Students will also explore theories of teaching and learning processes and the dynamics of motivation. The course will focus on developing effective approaches to address students' learning challenges in mathematics, drawing from emotional intelligence, learning styles, and other relevant theories. This course will also encourage a deeper understanding of leveraging students' prior knowledge to stimulate their intellectual curiosity.

**TEXT**: **5 Practices for Orchestrating Productive Mathematics Discussions [NCTM]** by Margaret Schwan Smith Mary Kay Stein

CREDIT HOURS: 3 Class hours

PREREQUISITES: ENG 1101 or ENG 1101CO or ENG 1101ML, and eligible for MAT 1475 or higher

**LEARNING OUTCOMES**:

Upon successful completion of the course, students will be able to:

* Demonstrate knowledge and the use of a wide variety of teaching and learning strategies in mathematics lesson planning.
* Demonstrate knowledge in theories of teaching and learning processes and motivation.
* Develop strategies to address students' learning difficulties in mathematics based on emotional intelligence, learning styles and other theories.
* Demonstrate effective use of technology in mathematics lesson planning.
* Demonstrate an understanding of ways to leverage students' prior knowledge and stimulate intellectual curiosity.

**INSTRUCTIONAL OBJECTIVES AND ASSESSMENT:**

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| **INSTRUCTIONAL OBJECTIVES**  For successful completion of the course, students should be able to: | **ASSESSMENT**  Instructional activity, evaluation methods and criteria: |
| Demonstrate knowledge and the use of a wide variety of teaching and learning strategies in mathematics lesson planning. | Reading, writing, discussion, and presentation |
| Demonstrate knowledge in theories of teaching and learning processes and motivation. | Reading, writing, discussion, and presentation |
| Develop strategies to address students' learning difficulties in mathematics based on emotional intelligence, learning styles and other theories. | Reading, writing, discussion, and presentation |
| Demonstrate effective use of technology in mathematics lesson planning. | Reading, writing, discussion, and presentation |
| Demonstrate an understanding of ways to leverage students' prior knowledge and stimulate intellectual curiosity. | Reading, writing, discussion, and presentation |

**GRADING PROCEDURE**:

• Project Presentations and Report 30%

• Participation/ group work 10%

• Learning Logs and Reflection Journal 20%

• Portfolio 10%

• Assignments 10%

• Final exam/ Final Paper 20%

TEACHING AND LEARNING METHODS: Discussion and student presentation of daily readings and projects

**WEEKLY COURSE OUTLINE:**

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| **Lesson** | **Topic** | **Section** |
| 1 | Reading/assignment for in-class activities: Anticipating and Monitoring in the classroom. | Chapter 1, p. 7-8 |
| 2 | Reading response to Selecting, Sequencing, and connecting in the classroom | Chapter 1, p. 9-12 |
| 3 | Setting Goals for Instruction | Chapter 2, p. 13-14 |
| 4 | First Draft of Lesson Plan |  |
| 5 | Selecting an Appropriate Task | Chapter 2, p. 15-19 |
| 6 | Investigating the Five Practices in Action | Chapter 3 |
| 7 | Second Draft of Lesson Plan |  |
| 8 | Anticipating what students will do | Chapter 4 p. 34 |
| 9 | Planning how to respond to student approaches | Chapter 4 p.35 |
| 10 | Determining the Direction of the Discussion: Selecting, Sequencing, and Connecting Students’ Responses | Chapter 5 p. 43 |
| 11 | Ensuring Active Thinking and Participation: Asking Good Questions and Holding Students Accountable | Chapter 6 p. 61-69 |
| 12 | Lesson Planning | Chapter 7 p. 75-79 |
| 13 | Analysis and Revised Lesson Plan |  |
| 14 | Final Draft of Lesson Plan and Presentation |  |
| 15 | Final Paper |  |