**DEPARTMENT OF EDUCATION**

**Shyama Prasad Mukherji College for Women**

**Teaching Plan for Semester – July to December 2022 (Semester VII)**

**Course and Year:** B.El.Ed. (IV year)

**Paper:** Pedagogy of Mathematics (OP 4.2)

**Faculty:** Ms Alprata Ahuja

**No. of Classes** (per week)**:** 3 lectures (during non-internship) or 1 lecture (during internship)

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| **Teaching Plan** | |
| **MONTH: JULY** | |
| **July: Week-wise Plan** | **TOPICS/ UNITS** (with details) |
| **3rd Week** | Introduction to the paper POM – purpose of studying the paper, connection of this paper with LME, MDE part of the course in 3rd year and CM studied in 1st year. Also, discussion on how this paper is related to IV-year school internship is done. A run through on how this paper will be studied throughout the session is done. |
| **4th Week** | Discussion about major concerns related to Teaching of Mathematics – To discuss in detail the major concerns related to teaching of Mathematics at various levels in school by looking at NCF 2005 Position paper on Teaching of Mathematics. It also helps students to look at themes existing at various levels of school Mathematics. (Unit 1) |
| **MONTH: AUGUST** | |
| **August: Week-wise Plan** | **TOPICS/ UNITS** (with details) |
| **1st Week** | Discussion on the policy document NCF 2005 – to understand the goals and problems with mathematics teaching. |
| **2nd Week** | Discussing the role various processes in mathematics  classroom as stated in the Position Paper in teaching of Mathematics (Unit 4) |
| **3rd Week** | Looking at NCTM’s Principles, Standards and Processes in detail – Understanding NCTM’s Principles, Standards and Processes and relating it to the guidelines as suggested in NCF. (Unit 1) |
| **4th and 5th Week** | Looking at NCTM’s Principles and Standards – Understanding NCTM’s Principles and Standards and relating it to the guidelines as suggested in NCF. (Unit 1) – continued. |
| **MONTH: SEPTEMBER** | |
| **September: Week-wise Plan** | **TOPICS/ UNITS** (with details) |
| **1st Week** | Understanding further the role various processes in mathematics  classroom – Problem Solving and its strategies, Problem Posing. (Unit 4) |
| **2nd Week** | Exploration of varied classroom-based examples on Problem Solving and Problem Posing. (Unit 4)  Looking at the TIMSS video study of Japanese classroom focused on problem solving and problem posing.  1st assignment will be explained to the students. |
| **3rd Week** | Extending the study of Fractions to Decimals. Look at few relevant videos and relating it to the pedagogic ideas studied in theory.  Continuing with teaching of decimals and related aspects such as naming, symbolizing etc. (Unit 3) |
| **4th Week** | Exploring further operations on Decimals. Look at few relevant videos and relating it to the pedagogic ideas studied in theory.  Critically looking at varied resources of teaching Decimals – Discussion and analysis of these resources for ascertaining the scope and limitations of applicability of these resources in mathematics classrooms. (Unit 3) |
| **5th Week** | Exploring resources for teaching of Decimals and deliberating further on its applicability. (Unit 3) |
| **MONTH: OCTOBER** | |
| **October: Week-wise Plan** | **TOPICS/ UNITS** (with details) |
| **1st and 2nd Week** | Mid Semester Break |
| **3rd Week** | Pedagogical considerations of Proportional Reasoning – Extending the ideas in the ambit of teaching rational numbers. (Unit 3) |
| **4th Week** | Discussing the expanse of rational numbers and the shifts in mathematical thought process to include this mathematical concept. Ratio and Proportions will be discussed next in this unit. (Unit 3) |
| **5th Week** | Pedagogical considerations of Proportional Reasoning – Looking at additive/ multiplicative reasoning, understanding role of various contexts in teaching proportional reasoning to students, applying studied concepts to teaching of ratio and proportion. Misconceptions related to this unit. (Unit 3)  (Unit 2 is discussed with other units throughout the semester.) |
| **MONTH: NOVEMBER** | |
| **November: Week-wise Plan** | **TOPICS/ UNITS** (with details) |
| **1st Week** | Exploring using technology for mathematics teaching. (Unit 4) |
| **2nd Week** | Exploring using technology for mathematics teaching. Looking at the specific resources of GeoGebra and Mathigon (Unit 4) – Continued. |
| **3rd Week** | **Dispersal of classes, Preparation Leave and Practical Exam Begin.** |
| **4th Week** | **Dispersal of classes, Preparation Leave and Practical Exam Begin.** |
| **5th Week** | **University Semester Examination/ Internal Examination** |
| **MONTH: DECEMBER** | |
| **December: Week-wise Plan** |  |
| **1st – 3rd Week** | **University Semester Examination/ Internal Examination** |
| **4th and 5th Week** | **Winter Break** |

**E-RESOURCES**

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| **S. No** | **Name of the e-Resources** | **Link to the e-Resources** |
|  | Geogebra - Software | <https://www.geogebra.org/> |
|  | Lab Manuals of Mathematics Schools Kits | <http://www.ncert.nic.in/departments/nie/niew/school_kits/kit_manuals.html> |
|  | Math Resources available on NCERT’s app ‘e-pathshala’ | <http://epathshala.nic.in/> |
|  | Varied video resources on teaching of Fractions and Decimals | <https://www.youtube.com/watch?v=ddhJIZdXRGU>  <https://www.youtube.com/watch?v=29IGiF3zjbY>  etc. |
|  | TIMSS Video Study – Japanese Mathematics Lesson – Finding the Angle | <http://www.timssvideo.com/jp1-finding-the-value-of-an-angle> |
|  | Mathematics Assessment Project | <https://www.map.mathshell.org/index.php> |
|  | Problem Posing Pedagogies: Situated Learning in Mathematics by Anita Rampal | <https://www.youtube.com/watch?v=yWwCN2XcVh0> |

**READINGS LIST**

1. NCERT. (2012). Source Book of Assessment VI-VIII. New Delhi: NCERT.
2. Post, T. (1992). Teaching Mathematics in Grades K-8: Research Based Methods (2nd Ed.). Boston: Allyn and Bacon.
3. Tobias, J. M., & Andreasen, J. B. (2013). Developing Multiplicative Thinking from Additive Reasoning. Teaching Children Mathematics, 20(2), pp. 102-109. doi:1. Retrieved from [http://www.jstor.org/stable/10.5951/teacchilmath.20.2.0102 doi:1](http://www.jstor.org/stable/10.5951/teacchilmath.20.2.0102%20doi:1)
4. Van De Walle, J. A., Karp, K. S., & Bay-Willams, J. M. (2013). Elementary and middle school mathematics: Teaching developmentally. USA: Pearson.
5. Wallace, E. C., & West, S.F. (1992.). Roads to Geometry. New Jersey: Prentice Hall.

**PLAN OF ASSESSMENT**

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| **S. No** | **Topic of Assessment Task**  (Assignment/ Project/ Presentation/ Activity) | **Month of Assessment Task** | **Weightage/ Marks Assigned** |
| 1. | Application of processes – problem solving and reasoning/ proof in middle grades NCERT mathematics textbooks. | September -October 2022 | 7 marks |
| 2. | Exploring use of technological resources for teaching mathematics, especially looking at the work of Dr Jonaki Gosh and Ms Sangeets Gulati | November 2022 | Non evaluative |