



SEMESTER – I

Course Code: BD1MA

Credits: 5

PEDAGOGY OF MATHEMATICS -1

COURSE OBJECTIVES

CO1: Explain the Aims and Objectives of teaching Mathematics.

CO2: Analyse the Micro teaching skills in teaching Mathematics.

CO3: Construct a model Lesson Plan for teaching Mathematics.

CO4: Recognise the various methods of teaching Mathematics.

CO5: Develop ICT knowledge in Mathematics.

Unit-I: AIMS AND OBJECTIVES OF TEACHING MATHEMATICS

Meaning, Nature, Scope, Need and Significance, Values, Aims and Objectives: Instructional objectives and Behavioral Objectives – Need and Importance of Instructional Objectives. Bloom's Taxonomy of Instructional Objectives: Cognitive, Affective and Psychomotor Domains, Revised Bloom's Taxonomy 2001 (Anderson & Krathwohl) Interrelation among the domains – Correlation between subjects.

Unit-II: TEACHING SKILLS

Micro-Teaching: Concept, Definition, Steps, Cycle, Micro-teaching Vs Macro-Teaching - Micro Teaching Skills: Skill of Set Induction, Skill of Explaining, Skill of Blackboard Usage, Skill of Questioning, Probing skills, Skill of Stimulus Variation, Skill of Reinforcement, Skill of non-verbal clues, Skill of Closure - Link lesson – Model episode.

Unit – III: APPROACHES OF TEACHING

Approaches of Lesson Planning - Steps - Organizing Teaching: Memory Level (Herbartian Model), Understanding Level (Morrison teaching Model), Reflective Level (Bigge and Hunt Teaching Model)– Unit Plan – Lesson Plan Writing.

Unit-IV: METHODS OF TEACHING

Teacher Centered Instruction: Lecture method, Demonstration and Team Teaching – Learner Centered Instruction: Self-Learning – Forms of Self-Learning: Programmed Instruction, Computer Assisted Instruction, Keller Plan, Project Method, Activity Based Learning (ABL), Active Learning Method (ALM)-Mind Map, Advanced Active Learning Method (AALM).

Unit-V: INSTRUCTIONAL MEDIA

Classification of Instructional Media – Use of Mass media in classroom Instruction. New Emerging Media: Tele-Conferencing, Communication Satellites, Computer Networking, Word Processors, Blended Learning, Flipped Classroom, Artificial Intelligence, Augmented Reality.

SUGGESTED ACTIVITIES

1. Students' seminar on the need, significance, and values of teaching Mathematics.
2. Prepare any two Micro teaching skills and practise them in front of the peer in the class.
3. Prepare a model lesson plan for Mathematics.
4. Teacher talk/Expert talk on different methods of teaching Mathematics.
5. Write an essay on the role of ICT in teaching Mathematics.

TEXT BOOKS

1. Agarwal, S.M. (2001). A course in teaching of modern mathematics. New Delhi: DhanapatRai Publishing.
2. Beckmann, C. E., Thompson, D. R. and Rubenstein, R. N. (2010). Teaching and Learning High school Mathematics. New Jersey: John Wiley and Sons Inc.
3. James, Anice. (2010). Teaching of mathematics. Hyderabad: Neelkamal Publications.
4. Mangal, S.K. (2002). Essentials of teaching learning and information technology. Tandon Publisher.
5. Sidhu, Kulbir Singh. (2010). Teaching of mathematics. New Delhi: Sterling Publishers.

SUPPLEMENTARY READINGS

- 1 DPEP-SSA. (2009). Teaching of Mathematics at upper primary level (Vol I and II). New Delhi: Distance Education Programme-SarvaShikshaAbhiyan
- 2 NCERT (2005). National Curriculum Framework-2005. New Delhi: NCERT
- 3 NCERT (2012). Pedagogy of Mathematics, Textbook for Two Year B.Ed Course, New Delhi: NCERT.
- 4 Sharma, R. A. (2001). Technological foundations of education, R. Lal Book Depot.
- 5 Sharma, Sita Ram & A.L. Vohra. (1993). Encyclopedia of educational technology. Anmol.

E – RESOURCES

1. http://assets.cengage.com/pdf/prs_clark-developing-critical-thinking.pdf
2. <http://edtechreview.in/trends-insights/insights/771-great-ways-to-teachskills-like-critical-thinking-and-problem-solving>
3. http://shodhganga.inflinnet.ac.in/bitstream/10603/418/8/08_chapter3.pdf
4. <http://study.com/academy/lesson/critical-thinking-math-problemsexamples-and-activities.html>
5. http://tc2.ca/uploads/PDFs/TipsForTeachers/CT_elementary_math.pdf
6. <http://tcthankseducation.blogspot.in/2010/04/micro-teaching-and-teaching skills.html>
7. <http://www.mathematics.com>

COURSE OUTCOMES

After completion of this course, the student-teachers will be able to:

CO1: understand the aims, objectives, need and significance of teaching Mathematics.

CO2: develop appropriate Micro Teaching Skills in Macro teaching.

CO3: prepare a Lesson Plan to teach Mathematics.

CO4: analyze various Teacher Centered Methods and Learner Centered Methods of teaching Mathematics.

CO5: utilize ICT skills for teaching Mathematics.



OUTCOME MAPPING

| COURSE OUTCOMES | PROGRAMME SPECIFIC OUTCOMES | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------|-----------------------------|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| CO1 | | | | | | | | | | * | | | | | | * | | | | | | | | |
| CO2 | | | | | | * | | | | * | | | * | | * | | * | | | | | | | |
| CO3 | | | | | | | | | | | | * | | | | | | | | | * | | * | |
| CO4 | | * | | | | | * | | | | | | | | | | | * | | | * | | * | |
| CO5 | | | | | * | | | | | | | | | | | | * | | | | | | | * |