



FORMAT FOR COURSE CURRICULUM

L	T	P/ S	SW/F W	TOTAL CREDIT UNITS
3	1	0	-	4

- **Course Title: Mathematics Education** **Course Code:** **Credit Units: 4**

Course Objectives: To provide trainee educators with further knowledge and understanding of mathematical concepts and principles, and of their applications in everyday life to help them develop skills, attitudes and values that are relevant to the study, practice and teaching of Mathematics

Pre-requisites: The student should have fundamental knowledge and understanding of key concepts of mathematics.

Student Learning Outcomes: On completion of this course the student teacher will be able to:

- distinguish between science and mathematics
- Develop the skill of solving real-life problems through the knowledge of different mathematical model.
- Get insight into the use of constructivist approach in mathematics teaching
- develop the skill of using various methods of teaching mathematics
- Hone problem solving skills with numerical ability
- highlight the significance of mathematics laboratory
- enable to distinguish between induction and mathematical induction

Course Contents/Syllabus:

	Weightage (%)
Module I Nature, Development and Significance of Mathematics	20
Meaning and dimensions of mathematics- the historical, scientific, language, artistic, recreational, activity and tool; Axioms, Postulates assumptions and Hypothesis in Mathematics. Historical perspective of the development of Notations and Number Systems Contribution of Ancient Indian Mathematicians in the field of applied mathematics. Perspectives on psychology of teaching and learning of mathematics-constructivism and enactivism Psychology of Mathematics learning- Vygotskyan perspectives, Zone of proximal development	
Module II Objectives and Strategies of Teaching-learning mathematics	30
Overview of all the concepts covered in B.Ed	

Content and Pedagogical analysis of mathematics. Innovation in Mathematics Education- use of mathematics labs, ET Tools, logo, recreational mathematics etc.	
Module III Curriculum of mathematics at different stages	15
Critical analysis of the curriculum at preprimary, primary, upper primary, secondary & higher secondary level Teaching Innovation in Mathematics Education- use of mathematics labs, ET Tools, logo, recreational mathematics etc.	
Module IV Mathematics teacher as a Reflective Practitioner	20
Finding solutions through Action Research: Developing an Action Research Proposal Development of Professional Portfolio Maintaining a teaching journal. Research in mathematics Education: Status, recent trend and priorities.	
Module V Evaluation in Mathematics Education	15
Role of assessment in mathematics Teaching and Learning. Review and Critique of the traditional methods of assessment. Changing trends in assessment Organize the evaluation process Assessment of affective measures in mathematics: use of tools and techniques such as observation, rating scale, check-list, anecdotal records, attitude scales, interest inventories and interviews. Self-assessment by students and by teachers, peer assessment, assessment of teachers by students. Portfolios: Planning and assessment of Portfolios in mathematics learning. Assessment of organization of curricular activities: organization and impact. Assessment of Laboratory skills and procedural knowledge. Assessment of Content knowledge through Activities and Experiments	

Pedagogy for Course Delivery:

Critical readings Lecture, discussion, film viewing, collaborative work, field work, project work, Class discussions

Lab/ Practical's details, if applicable: NA

List of Experiments: NA

Assessment/ Examination Scheme:

Theory L/T (%)	Lab/Practical/Studio (%)	End Term Examination
100	0	70

Theory Assessment (L&T):

Continuous Assessment/Internal Assessment					End Term Examination
Components (Drop down)	Test	Project	Seminar	Attendance	End Term Examination
Weightage (%)	10	10	5	5	70

Lab/ Practical/ Studio Assessment : NA

Continuous Assessment/Internal Assessment					End Term Examination		
Components (Drop down)							
Weightage (%)							

Text & References:

- Alice F. Art and Eleanan Armaer Thomas. *Becoming a Reflective Mathematics Teacher*.
- Baw, G.R. and George, L.U. (1976). *Helping Children Learn Mathematics-A Competency Based Laboratory Approach*. California, Cummings Publishing Co.
- Gupta, S. Das(1990), *An unending story in mathematics*, N.C.E.R.T ,New Delhi
- Kumar, S.2009), *Teaching of Mathematics*, Anmol Publications , New Delhi.
- Mangal S.K. (1993),*Teaching of Mathematics*, Arya Book Depot, New Delhi
- NCERT , *Content cum Methodology of Teaching Mathematics for B.Ed*, New Delhi.
- NCERT(2005),*National curriculum framework for teacher education*, New Delhi

Any other Study Material:

- Bhanumurthy, I.S. (1992). *Ancient Indian Mathematics*. Wiley Eastern Ltd, New Delhi.
- Gronlund, N.E., (1990) *Measurement and Evaluation in Teaching*. New York; Macmillan.
- Susan O'Connell, John SanGiovanni (2014)*Putting the Practices Into Action: Implementing the Common Core Standards for Mathematical Practice*, K-8,Amizon Books, ISBN-13: 978-0325046556
- Bhanumurthy, I.S. (1992). *Ancient Indian Mathematics*. Wiley Eastern Ltd, New Delhi.
- Gronlund, N.E., (1990) *Measurement and Evaluation in Teaching*. New York; Macmillan.
- Heimer, R.T. and Trueblood, C.R. (1970) *Strategies for Teaching Children Mathematics; Reading*. Massachusetts: Addison Wesley Publishing C