

## SBC (4) (IV.5.2) Ethnomathematics and Cultural Practices Skill Based Course

### 1. Credit Distribution of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
SBC (4) (IV.5.2)						
<b>Ethnomathematics and Cultural Practices</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>Undergraduate</b>	<b>NIL</b>

### 2. Learning Objectives

The course presents the conceptual foundations of ethnomathematics and how mathematical ideas and practices are embedded in traditional societies. Students will examine mathematical ideas used by traditional societies in art, games, measurement, handicraft, agriculture practices and how these practices can be integrated into the present mathematics curriculum. Students will gain hands-on experiences on indigenous mathematical practices, local artefacts such as puppetry, rangoli, Kolam art, measurement & calculation by tribal communities, and how to integrate this for culturally responsive mathematics pedagogy.

### 3. Learning Outcomes

- Understand the evolution and scope of ethnomathematics;
- Explore indigenous mathematical practices existing in cultural, historical, and social contexts;
- Develop culturally responsive pedagogical approaches for teaching mathematics;
- Review the existing research trends in ethnomathematics studies.

### 4. Syllabus

Concept, meaning, and origin of ethnomathematics; Importance of contextualised mathematics in NEP 2020; Mathematical reasoning in traditional crafts, weaving, embroidery, and Kolam/rangoli designs; Case studies of tribal and rural communities; Integrating ethnomathematics into mathematics curriculum and pedagogy; Ethnomathematics as a research field and latest research trends.

### 5. Practicals

**[60 hours]**

- Create a blog to promote indigenous mathematical practices.

- Construct a scaled model of any architectural monument depicting proportional principles.
- Designing an ethnomathematics-integrating unit plan.
- Conduct systematic review of ethnomathematics research in the last 5 years.
- Draw ethnomathematics based practices on the map.
- Create a historical timeline of ethnomathematics practices in India.
- Design a workbook of mathematical patterns in Indian handicraft.
- Make a documented account of ethnomathematical practices of any chosen Indian state/tribe.
- Design a social innovation project to promote and sustain ethnomathematical practices.

### **6. Essential Readings**

- Ascher, M. (1991). *Ethnomathematics: A Multicultural View of Mathematical Ideas*. Routledge.
- Rosa, M. & Coppe de Oliveira, C. (2020). *Ethnomathematics in Action*. Springer.
- Gerdes, P. (2020). *Cultural Expressions of Mathematical Ideas*. UNESCO.

### **7. Suggestive Readings**

- Rosa, M., D'Ambrosio, U., Orey, D.N., Shirley, L., Alangu, W. V., Palhares, P. & Gavarrete, M. E. (2016). *Current and Future Perspectives of Ethnomathematics as a Program*. Springer.
- D'Ambrosio, U. (1985). *Ethnomathematics and its Place in the History and Pedagogy of Mathematics*. *For the Learning of Mathematics*, 5 (1). FLM Publishing Association, Montreal, Quebec, Canada.