## **Course title:** Understanding Teaching Practices (Part 1)

## **Course Code:** SCE103.2

## **Credits:** 4

## Course Description:

Fostering a supportive learning environment requires teachers to think about linking the educational theories and class work, and develop a structure suitable for their own classes. Through shadowing teachers for a sustained duration and interacting with them allows graduate students to witness teachers' pedagogic practices in a daily/typical school environment, reflect on the observations, and build a nuanced understanding of existing teaching and learning systems in their local communities.

The basic 'Understanding Teaching Practices' course is designed to introduce PhD graduate students with some pedagogical approaches in classroom-based STEM education in local schools, as well as orient them to the resources of teacher professional development programs.

In the course, the graduate students in the initial 4 weeks will be engaged in literature reading and analyze prerecorded class sessions. With some training, they will engage in the field-visits for class observations for the next 3 weeks. Lastly, they participate in school visits to observe structured activities under Vigyan Pratibha program to critically analyse the discourse around selective core disciplinary curricular content and reflect on the teaching and learning processes of these predesigned activities. The fieldwork locations will be informed to graduate students following the school systems availability and scheduling.

## Learning Objectives:

- To obtain a closer view of teaching processes in local schools in a daily/typical school environment
- To explore and demonstrate linkages between educational theories with pedagogic practices in school settings
- To develop skills for noticing discipline specific responsiveness through video-analysis exercises
- To develop a deeper appreciation of structured activities to engage students with disciplinary contents.
- Developing understanding of teachers' arsenals for pedagogic exercises in science and mathematics.

## Assessment:

The course will involve two assessments. First assignment is based on teaching/observational assignments and carries 30% weightage. The second assessment is based on the observational data collected through Vigyan Pratibha activity session and carries 30% weightage. A total of 20% score is reserved for reflective exercises following the teaching which will be assessed through reflective-diaries and group discussions. The remaining 20% score is reserved for participation in discussion of literature and design activities.

## Some suggestive readings for Literature review

1. Elizabeth A. van Es, Jessica Tunney, Lynn T. Goldsmith, and Nanette Seago; Framework

for the Facilitation of Teachers' Analysis of Video, Journal of Teacher Education, 2014, Vol. 65(4) 340–356

2. Hiebert, J., Morris, A, Berk, D. Jansen, A. (2007). Preparing teachers to learn from teaching. Journal of Teacher Education, 58(1), 47–61.
3. The Unfinished Agenda of Mathematics Curriculum Reform book chapter from Ramchand M. , Khunyakari R. , & Bose A. , Learning without burden: Where are we a quarter century after the Yashpal Committee Report? (pp. 282–304). Routledge.
4. Neumann, K., Kind, V., & Harms, U. (2019) Probing the amalgam: the relationship between science teachers' content, pedagogical and pedagogical content knowledge, I*nternational Journal of Science Education*, 41:7, 847-861, DOI: 10.1080/09500693.2018.1497217
5. Blanton, M. L., & Stylianou, D. A. (2009). Interpreting a community of practice perspective in discipline-specific professional development in higher education. Innovative Higher Education, 34(2), 79-92.
6. Gehrtz J, Brantner M, Andrews T C (2022) How are undergraduate STEM instructors leveraging student thinking? (2022) International Journal of STEM Education, 9(1), ar 18
7. Problematising teacher education practice in India: Developing a research agenda (2014) Education as change, Vol 18, S5-S18 (optional)
8. Selective articles from Teacher Plus and Voice of Teachers and Teacher Educators magazines

## Exercises:

- **Observing curated sessions of students' workshops** of a variety of science and mathematics learning activities recorded for research purposes will be used for the research analysis activity. The graduate students, after receiving ethics training (as a part of this course), will be engaging with some of these recordings to explore the disciplinary teaching-learning practices and teaching practice as a whole.

- **Field visit** involves shadowing an in-service high-school teacher for 2 chapters of grade VIII or IX (or college teacher for grade XI) depending on graduate students' interest. A field notes diary needs to be maintained by the graduate students during the activity to note the observations of ongoing discourses and reflect on the teaching-learning processes post-facto.

- **Design experience** will use insights from previous tasks and focus on designing a preliminary activity for school/college students in one content topic

## Course Logistics:

**Course time and day:** Wednesday 9.00 AM - 1.00 PM (4 hours per week)

**Course start date:** 5 August 2026

**Venue:** Rm 101, Vigyan Pratibha lab, HBCSE main building

**Facilitator:** Deepa Chari

**Contact for course:** deepa@hbcse.tifr.res.in