



LUMS X



THE AGA KHAN UNIVERSITY

Institute for Educational Development

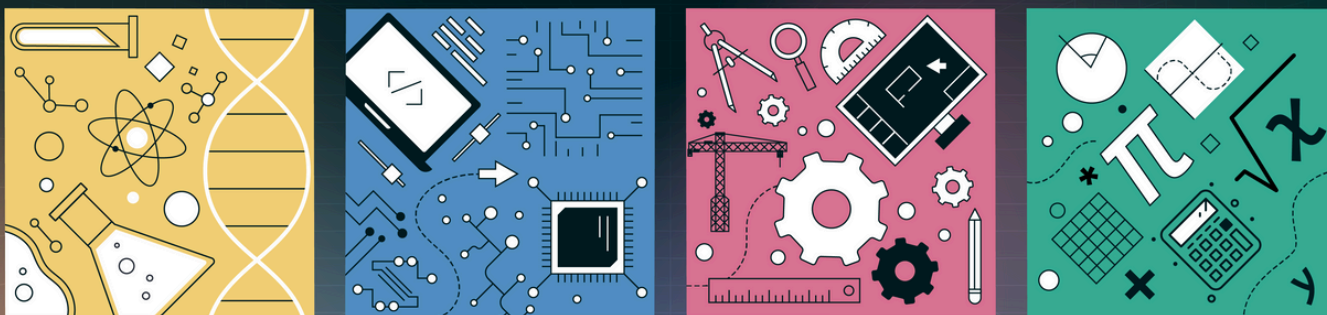
# STEM FOR EDUCATORS



Dr. Tasneem Anwar



LUMSx is the center for online learning and professional development at LUMS. We extend LUMS' excellence in teaching and research beyond its borders by leveraging technology and innovative pedagogy. Our courses aim to bridge critical knowledge & skill gaps for Pakistani learners and to meet their diverse learning needs, we offer **Massive Open Online Courses (MOOCs)**, **Hybrid Courses**, **Synchronous (Live) Courses**, and **Free Open Online Courses (OpenCourseWare)**. We intend to harness technology for enhancing access, improving educational quality, and amplifying education's impact.



**Course Format:** Hybrid - Cohort

**Language:** English, Urdu

**Starting Date:** 4 November, 2024

**Registration Deadline:** 27 October, 2024

**Duration:** 6 Weeks

**Price:** PKR. 14,000

# ABOUT THIS COURSE



This online course, designed for grade 4-8 science and mathematics teachers and teacher educators, dives into the essentials of integrating STEM (Science, Technology, Engineering, and Mathematics) in the mainstream science education. With the recent revisions in the National Curriculum of Pakistan (NCP, 2022-23) emphasizing critical role of STEM, this course responds to the urgent need to equip educators with the knowledge, strategies, and confidence to bring STEM to life in their classrooms. Course participants will embark on an exploratory journey where they will engage in foundational questions like; what is STEM and why do we need STEM? How do we identify STEM? How does STEM teaching and learning look like? The course offers hands-on approaches for implementing STEM strategies in teaching and learning, guiding educators through the process of designing compelling STEM unit storylines, and honing their skills in critiquing and refining educational materials for maximum impact.

The course will follow hybrid learning within a group (cohort) of participants during the total span of six weeks. The course will have five modules asynchronously. While there will be two synchronous zoom sessions, one after completing module 3 and one after completing module 5. The course will require 6 weeks and each module will require one week for completion except for module 4 that will require two weeks.

## WHAT WILL YOU LEARN

Upon completion of this course, participants will be able to:

- Reflect on the need for STEM within science teaching and learning
- Explore characteristics of integrated STEM
- Demonstrate the use of STEM in teaching and learning
- Apply the characteristics of STEM to design a STEM unit storyline
- Critique STEM unit storyline

# MEET YOUR INSTRUCTOR



Course Instructor

**Dr. TASNEEM ANWAR**

*Assistant Professor - STEM Education,  
Aga Khan University*

Dr. Tasneem Anwar is an Assistant Professor of Science Education specializing in STEM at the Aga Khan University's Institute for Educational Development. Her research focuses on curriculum development, STEM -focused teacher professional development and the integration of AI and non-AI technologies in education. Dr. Anwar has received numerous accolades, including the Higher Education Commission Pakistan's Best University Teacher Award 2020, Aga Khan University's Outstanding Teacher Awards in 2018 and 2023, and is a Fellow of the Higher Education Academy, UK, and an inaugural member of the Haile T. Debas Teachers' Academy.

# COURSE OUTLINE

4th November - 8th November

## Module 1: Introduction to STEM

By the end of this module, you will be able to:

- reflect on the historical development of STEM education and its significance in enhancing student learning and preparedness for the future.
- recognize the role of formal and informal STEM in addressing contemporary educational challenges

9th November - 15th November

## Module 2: Characteristics of STEM

By the end of this module, you will be able to:

- Explore various models of integrated STEM education and evaluate their effectiveness in fostering student engagement and learning.
- Identify the key characteristics of integrated STEM education.

16th November - 27th November

## Module 3: STEM in Action

By the end of this module you will be able to:

- Explore various strategies for incorporating characteristics of STEM into classroom teaching & learning
- Demonstrate the core characteristics of STEM using a STEM storyline template
- This module consists of **1 Live Class on 22nd November**

28th November - 6th December

## Module 4: Designing STEM Unit Storyline

By the end of this module, you will be able to:

- Examine the NCP-2022-23 of science and mathematics to identify anchoring disciplinary content knowledge.
- Apply knowledge of integrated STEM characteristics to design a cohesive and engaging STEM unit storyline suitable for grades 4-8.

7th December - 15th December

## Module 5: Redesigning STEM Unit Storyline

By the end of this course, you will be able to:

- Critique STEM unit storylines, using the STEM integration curriculum assessment tool to assess and provide constructive feedback.
- Revise and redesign STEM unit storyline based on peer assessment.
- This module consists of **1 Live Class on 13th December**



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*As an **online learning gateway** of LUMS, we aim to extend LUMS' excellence in teaching and research **beyond its borders** by leveraging technology.*