INTRODUCTION

IIT Bombay has conducted many large-scale teacher training workshops under the Train 10,000 Teachers (T10KT) programme, sponsored by the National Mission on Education through ICT (NMEICT), MoE, Govt. of India, and trained over 2,00,000 teachers.

We are all witnessing an increasing need to use online teaching-learning processes. The face-to-face interactions combined with online mechanisms are referred to as blended-MOOC offerings. Interactions can also happen remotely through video conferencing. This workshop is designed to train our teachers on **Thermodynamics.**

This workshop is a joint initiative of the Knowledge Incubation **TEQIP** III (KITE), Parimal and Pramod Chaudhari Centre for Learning and Teaching (PPCCLT) and Teaching Learning Centre, ICT at IIT Bombay, under 'Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching' **(PMMMNMTT)**, through Ministry of Education, Government of India. IIT Bombay will conduct a series of pedagogy workshops on various subjects. We will use our MOOC platform IITBombayX and some video conferencing tools for live interactions.

METHODOLOGY OF THE WORKSHOP

A MOOC course ME209x Thermodynamics is already developed and offered to student-learners on IITBombayX. The content of that course covering different topics will be made available to participants of this workshop. This is primarily for participants to revise their own knowledge and become familiar with the approach of teaching the course. To ensure that participants have carried out such revisions, quizzes will be held on a few specific topics during the workshop. The live sessions will begin with an introduction on pedagogy for teaching in blended mode, followed by one session each on how to teach a few selected topics. There will be a concluding session on conducting online assessments.

SYLLABUS FOR THE WORKSHOP

In this workshop, we deal with the pedagogy for effective teaching of Thermodynamics. The topics covered in this course are:

- Basic concepts and definitions
- The work interaction
- The first law, energy and the heat interaction
- The zeroth law, temperature and scales of temperature
- The second law, thermodynamic temperature scales and entropy
- Open thermodynamic systems (will be covered if time permits)

The course content of ME209x, which include the recorded video lectures, slides, and practice problems, will be made available to participants to carry out this revision online. **The material can be later used by participants for their own teaching. Submissions made by every participant will also be released in Open Source under CC-BY-SA license.**

This workshop also focuses on Understanding the pedagogy of teaching of this course in online/blended mode.

Participants will attend live sessions explaining the suggested method of revision, for understanding teaching pedagogy for each of the few selected topics, and for conducting online assessment.

TEACHING FACULTY

Prof. Bhalchandra Puranik,
Dept. of Mechanical Engg, IIT Bombay
Prof. Upendra Bhandarkar,
Dept. of Mechanical Engg, IIT Bombay
Prof. Uday Gaitonde, Former Professor,
Dept. of Mechanical Engg, IIT Bombay

WORKSHOP FEE

The course fee for the 3-day pedagogy workshop is **Rs. 750/-**. The course fee once paid is neither transferable nor refundable under any circumstances.

Note for TEQIP-III Institute Faculty Members:
If your institute is under the TEQIP III Institutions, then please check with your head of Institution or Coordinator, for the nomination to this course.The registration fees for the faculty nominated under TEQIP-III institutions will be paid by IIT Bombay from TEQIP funds. For such individuals, an invitation link along with the registration/activation process will be sent to the registered email address. The steps given in that email need to be followed.

IITBombayX portal will require details like full name, email, username, state, city, PIN code, country, and other details. **If you already have an account on IITBombayX, you must use the same email-id to register for the course.**

One of the aims of this workshop is to have wider interaction between the nominated TEQIP-III-KITE participants with a large number of faculty from other institutions, possibly some from their own institutions as well. This will enable better pedagogical exposure to all participants.

WHO SHOULD ATTEND?

The workshop will benefit faculty colleagues who are teaching Engineering Thermodynamics at the UG level. The focus of the workshop will be on Mechanical Engineering Thermodynamics. However, teachers from allied engineering departments may also benefit to some extent. Faculty from polytechnic and Research Scholars from various institutions may also participate.

CERTIFICATE

E-certificate will be provided to the participants after successful completion of the workshop. For successful completion and certification, each participant will have to do assigned tasks, such as answering quizzes, uploading designated material prepared by them, participation in live sessions, postings on the discussion forum, and completing the assigned peer review process.

DURATION AND MODE OF CONDUCT

The interaction session of the workshop will be conducted from **19 to 21 February 2021.** It will be conducted through blended mode, using the IITBombayX platform as well as video conferencing tool for live interaction.The duration for interaction will be around **3 hours everyday.**

HOW TO APPLY?

Enrollment will be strictly online, and no other mode of application will be entertained. The online registration for the course will start on **24 December 2020.** It will remain open till **18 February 2021.**

The URL for registration is:
http://www.it.iitb.ac.in/lakshya/announcements.html

Registration process for the workshop is given below:

- Sign up using your valid email id on the web site: https://www.it.iitb.ac.in/lakshya/signup.html
- After verification, your account will be created
- Login on the website with the verified account
- Go to **Announcements**, select the workshop and register
- After successful registration, you will receive an auto mated email. Your name will be listed in the "List of Participants page"
- Thereafter also register on **IITBombayX** site (https://courses.iitbombayx.in/register) using the same email id to access the course content.

TECHNICAL REQUIREMENTS

- Laptop or desktop: Linux or Windows OS
- Microphone and speaker must be working
- "Reasonable" Internet connection

ADDRESS FOR COMMUNICATION

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3-day Pedagogy Workshop on Teaching Thermodynamics

Conducted jointly by
TEQIP-III KITE, PPCCLT (IIT Bombay)
and Teaching Learning Centre (ICT)
under **PMMMNMTT,**
MoE, Govt. of India

19 - 21 February 2021

Coordinated from
IIT Bombay

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