

## Costs and logistics

The course fee is US\$ 2,000, inclusive of major expense health insurance, book allowance, training materials, internet connection and laptop rent, book allowance and airport transport. The fee does NOT include living allowance (suggested US\$ 50/day for food and accommodation), international airfare, costs of the Mexican visa itself (US\$ 140), travel incidentals, and the deductible for health insurance (US\$ 150 per injury/sickness).

*Maximum number of participants is 3.*

*Application deadlines is March 31.*

**For an application form and more details contact:**

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CIMMYT is a non-profit research and training center with direct links to about 100 developing countries through offices in Asia, Africa, and Latin America. CIMMYT's mission is to "to conduct maize and wheat research to benefit developing countries. Through strong science and effective partnerships, CIMMYT creates, shares, and uses knowledge and technology to increase food security, improve the productivity and profitability of farming systems, and sustain natural resources in developing countries." CIMMYT achieves its mission with about 100 specialized research staff and 500 support staff from about 40 countries. The Center is funded by international and regional development agencies, national governments, private foundations, and the private sector.

# Wheat Chemistry and Quality Improvement Course

**6-8 weeks (starting in mid-June )**



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 **CIMMYT**  
MEXICO

Modern wheat researchers are faced with multiple responsibilities: understanding the genetic and environmental controls of specific grain components and the relationship of these components with the processing qualities, and the rapid identification and manipulation of quality-related traits based on the use of reliable, fast and low-scale quality testing methodology. The Wheat Chemistry and Quality Improvement Course aims to enhance the knowledge of participants in the theoretical and practical aspects of improving grain compositional factors that influence the end-use quality of wheat.

## Participants

The Wheat Improvement Course is a globally unique training opportunity for quality scientists who work in the public, private or non-governmental sectors. Scientists particularly working in National Agricultural Research System (NARS) in the area of wheat breeding will find this course useful.

Participants must fulfill the following requirements:

- English or Spanish proficiency to allow for full participation in the course program and discussions.
- Minimum level of a Master of Science (MSc), with at least 2 years practical experience (in case of BSc at least 3 years experience) in field breeding, or PhD.
- Active involvement in research in the area of wheat breeding or wheat chemistry and technology
- Demonstrated professional experience and leadership potential
- Successful and timely completion of course application forms and relevant materials



Participants may be asked in the future to assist with the organization and delivery of short-term, in-country courses

## Course Objective

To enhance the knowledge of participants in the theoretical and practical aspects of improving grain compositional factors that influence the end-use quality of wheat.

## Course Structure

Strong emphasis is placed on the inter-disciplinary approach, and participants will interact with various CIMMYT programs and researchers. The course is divided between lectures and laboratory sessions. Lectures focus on the theoretical and practical aspects of wheat quality and quality improvement. Laboratory sessions are conducted for applying methodologies that select for quality traits relevant to breeding activities (in segregation and the advanced stage).



## Course Program (Outline):

### INTRODUCTION

- Trends in wheat production and consumption as related to end-use quality

### WHEAT CLASSIFICATION

- Wheat type and classes
  - Grain color
  - Grain hardness
  - Grades

### WHEAT QUALITY CRITERIA

- End-use quality criteria
  - Industrial milling
    - Flour milling
    - Semolina milling
  - Quality for bread
    - Mechanized baking
    - Semi mechanized baking (leavened, flat, and steamed bread)
  - Quality for flour noodles
  - Quality for soft wheat products
  - Quality for Pasta, and other durum products
    - Alimentary Pasta
    - Flat breads
    - Couscous and burghoul (bulgur)



### WHEAT QUALITY TESTING

- Grain characteristics and end-use quality
  - Physical grain factors
    - Grain soundness (biotic & abiotic)
    - Grain size, shape, test weight
    - Yellow Berry
    - Grain hardness
  - Grain compositional factors
    - Moisture
    - Ash content
    - Theoretical aspects of Enzymatic activity (amylases, proteases, PPO)
    - Protein
    - Theoretical aspects of starch (amylose/amylopectin) & starch damage
  - Experimental milling
    - Whole grain grinding
    - Grain conditioning
    - Milling in Buhler mill
    - Milling in Brabender mill
  - Grain and flour quality characteristics
    - Flour protein
    - Gluten content & gluten Index
    - SDS-sedimentation
  - Dough Rheology
    - Mixographic properties
    - Farinographic properties
    - Alveographic properties
  - Baked and cooked products
    - Bread making
    - Cookie making
    - Noodle making-steamed bread making (optional)
    - Pasta making-cooking quality (optional)

