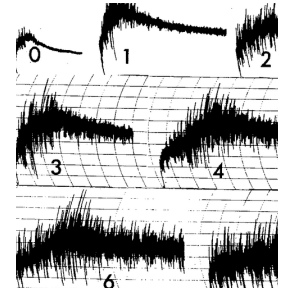
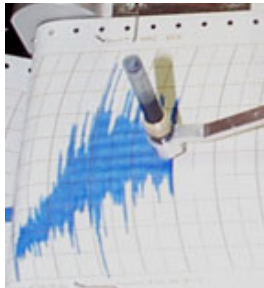




# IGP Institute

## IGP–KSU Practical Flour and Dough Testing November 28 – December 1, 2023



### Course Description:

The focus of Practical Flour and Dough Testing is hands-on application of analytical tests used to determine attributes of different flours. Students are introduced to the analytical techniques that they may encounter when working with flour mills and bakeries. This course will provide a broad understanding of standard analytical methods and procedures commonly used in flour quality testing through hands-on exercises. This course will show how analyses are done as well as how to evaluate, interpret, and use the results.

Basic analytical tools used for flour analysis that will be covered in the course include moisture, pH, TTA, SRC, gluten washing, damaged starch, and rheological tests such as farinograph, mixograph, falling number, mixolab, alveograph, and RVA that measure various dough properties.

### Learning Outcomes

- Discuss the standard analytical flour and dough tests used in the commercial milling and baking industry
- Discover the scientific principles of the standard analytical flour and dough tests
- Practice how the standard analytical flour and dough tests are conducted
- Analyze the data collected by standard analytical flour and dough tests
- Interpret the test results to indication relative flour quality



### Who Should Attend

- Employees of flour milling companies
- Ingredient suppliers
- Equipment manufacturers
- Baking companies

**See the full course agenda on the back.**

**KANSAS STATE**  
**UNIVERSITY**

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# IGP–KSU Practical Flour and Dough Testing – Course Agenda

## November 28 – December 1, 2023

### Day 1

#### 8:00 Introduction – Flour Composition

- Review the basic components of wheat flours: starch, gluten proteins, arabinoxylans.

#### NIR Moisture, Ash, and Protein

- Discuss the scientific principles used in NIR measurement of moisture, ash, and protein.
- Discuss the definition and importance of moisture basis.

#### Oven Moisture and Ash

- Explain how oven moisture and ash tests are conducted.
- Measure moisture of flour

#### LECO Protein

- Discover the combustion method to measure protein.

#### pH and TTA

- Recognize the difference between pH and TTA measurements
- Explain how to conduct pH and TTA testing

#### 5:00 Adjourn

### Day 2

#### 8:00 Farinograph and Mixograph

- Observe and compare these two common methods of measuring flour mixing characteristics
- Interpret the data from farinographs and mixographs, and discuss applications

#### Mixolab

- Explain the measurements obtained from mixolab.
- Observe and describe how the mixolab test differs from other recording dough mixers

#### Damaged Starch

- Identify how starch is damaged and its role in baking
- Explain the scientific principles used in damage starch measurement
- Test damaged starch and interpret test results using the SD Matic

#### 5:00 Adjourn

### Day 3

#### 8:00 Hand Gluten Washing

- Isolate gluten from several types of flour and use the information in conjunction with other analyses during the course to consider flour applications

#### Glutomatic

- Evaluate the mechanized version of gluten washing

#### Alpha-Amylase Determination

- Identify what alpha-amylase is and its role in baking
- Discover the scientific principles used in alpha-amylase measurement

#### Falling Number and RVA

- Demonstrate and compare methods of alpha-amylase testing.
- Discover physical and chemical changes that occur when starch gelatinizes and then retrogrades.
- Observe use of RVA to measure starch cooking and pasting behavior.

#### 5:00 Adjourn

### Day 4

#### 8:00 AlveoLAB

- Explain the scientific principles of the alveograph test
- Explore how the alveograph test is conducted

#### SRC Manual Method

- Identify impact of flour components on water holding capacity
- Discover the scientific principles used in SRC measurement

#### Flour Color

- Explain which flour components contribute to color
- Discuss why measurement of flour color is important
- Describe the methods to measure flour color

#### 12:00 Adjourn and depart for home