

## **\*\*Day 1: Introduction to Non-Destructive Testing (NDT)\*\***

### **\*\*Objective:\*\***

Students will understand the concept of non-destructive testing and explore various methods used to test materials without causing damage.

### **\*\*Materials Needed:\*\***

1. Whiteboard and markers
2. Projector or access to online videos/presentations
3. Samples of different materials (metal, plastic, wood, etc.)
4. NDT equipment models or images
5. Safety goggles

### **\*\*Day 1 Activities:\*\***

#### **\*\*1. Introduction to NDT (30 minutes)\*\***

- Start the lesson by asking students if they have ever heard of non-destructive testing. Discuss their prior knowledge and expectations.
- Explain that NDT is a method used to inspect, test, or evaluate materials, components, or assemblies for discontinuities, defects, or properties without causing damage to the original part.
- Use the whiteboard or projector to present an overview of NDT methods such as visual inspection, ultrasonic testing, radiography, eddy current testing, etc.
- Show real-life examples or videos demonstrating NDT techniques in action.

#### **\*\*2. Hands-on Exploration (45 minutes)\*\***

- Divide students into small groups.
- Provide them with samples of different materials and NDT equipment models or images.
- Instruct each group to discuss and predict which NDT method(s) would be most suitable for inspecting each material, considering factors like material properties, thickness, and potential defects.
- Encourage students to think critically and justify their choices.

#### **\*\*3. Group Presentations (20 minutes)\*\***

- Each group presents their findings, explaining which NDT methods they chose for each material and why.
- Encourage questions and discussions among groups to deepen understanding.

#### **\*\*4. Safety Precautions (10 minutes)\*\***

- Discuss safety precautions when working with NDT equipment, emphasizing the importance of wearing safety goggles and following instructions carefully.

### **\*\*Homework:\*\***

Assign students to research one NDT method in more detail and prepare a short presentation for the next day.

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## **\*\*Day 2: In-depth Exploration of NDT Methods\*\***

**\*\*Objective:\*\***

Students will gain a deeper understanding of specific non-destructive testing methods and their applications.

**\*\*Materials Needed:\*\***

1. Whiteboard and markers
2. Projector or access to online videos/presentations
3. Students' presentations from the previous day
4. Additional NDT equipment models or images
5. Safety goggles

**\*\*Day 2 Activities:\*\***

**\*\*1. Review and Presentation (30 minutes)\*\***

- Start by briefly reviewing the concepts covered in the previous lesson.
- Invite students to present their research on specific NDT methods.
- Encourage questions and discussions after each presentation.

**\*\*2. In-depth Exploration (45 minutes)\*\***

- Choose one or two NDT methods (e.g., ultrasonic testing, radiography) for a more detailed exploration.
- Explain the principles behind the selected method(s), how they work, and their advantages and limitations.
- Show videos or demonstrations to illustrate the process.

**\*\*3. Hands-on Activity (40 minutes)\*\***

- Set up hands-on stations with different NDT equipment (simulated or real if available).
- Allow students to rotate through the stations, trying out the equipment under supervision.
- Encourage them to observe how each method detects defects or properties in materials without causing damage.

**\*\*4. Wrap-up and Reflection (15 minutes)\*\***

- Lead a discussion on the importance of NDT in various industries and how it contributes to safety, quality control, and innovation.
- Ask students to reflect on what they've learned and how they might apply this knowledge in real-world scenarios.

**\*\*Homework:\*\***

Assign students to write a short reflection on their experience with non-destructive testing, including its significance and potential career paths related to NDT.

**\*\*Assessment:\*\***

Assess students based on their participation in discussions, group work, presentations, and understanding demonstrated during hands-on activities.