**Weekly Lesson Plan**

**(This will be implemented for each Engineer Specialization)**

*Agricultural*

*Cybersecurity*

*Electronic Design*

*Electrical*

*Engineering (General)*

*Mechanical*

*Software*

*Technical*

*Renewable Electrical Energy*

*Mechanical Design*

**Theme**: **Problem-Solving, Creativity, and Personal Reflection**

**Grade Level**: High School (Engineering-focused)

**Objective**:  
Students will apply critical thinking, creativity, and self-reflection to problem-solving in engineering by engaging in diverse activities like video interviews, mind mapping, and personal storytelling. By the end of the week, students will demonstrate their understanding through artistic expression and assessments.

**Day 1: Video Interview Activity**

**Objective**: Introduce students to real-world engineering problems and solutions through an interview with a professional in the field.

* **Materials**: Pre-recorded video interview with an engineer or innovator, projector, discussion worksheet
* **Activity**:
  1. Watch a 10-15 minute video interview with a professional discussing an engineering problem, their approach to solving it, and their career journey.
  2. After the video, divide students into pairs or small groups to discuss:
     + What problem did the engineer solve?
     + What methods or tools did they use?
     + How does their work relate to what we're learning in class?
  3. Groups share their insights with the whole class.
* **Assessment**:
  1. Exit slip: Students write one thing they learned from the interview and how it applies to their own interests or future career goals.

**Day 2: If/Then Statements Activity**

**Objective**: Strengthen logical reasoning and problem-solving skills by exploring cause-and-effect relationships in engineering.

* **Materials**: Whiteboard, markers, worksheets with If/Then scenarios related to engineering problems
* **Activity**:
  1. Introduce the concept of **If/Then** statements and how they relate to solving engineering problems.
  2. As a class, work through examples of engineering problems, such as:
     + “If we design lighter materials, then...”
     + “If we decrease energy consumption, then...”
  3. In pairs, students create their own **If/Then** statements based on engineering scenarios provided by the teacher or ones they come up with.
  4. Share and discuss their If/Then statements with the class, focusing on logic and possible real-world outcomes.
* **Assessment**:
  1. Collect the completed **If/Then** worksheets and assess for logical reasoning and problem-solving accuracy.

**Day 3: Mind Maps Activity**

**Objective**: Help students visually organize and connect ideas related to an engineering concept using mind mapping.

* **Materials**: Large poster paper, colored markers, art supplies
* **Activity**:
  1. Introduce mind mapping as a technique to explore and organize complex ideas visually.
  2. Present a central theme (e.g., "Sustainable Engineering" or "Innovative Transportation Systems") and place it at the center of a large piece of paper.
  3. Divide the class into small groups and assign each group to a sub-topic (e.g., materials, environmental impact, design process).
  4. Each group creates a branch of the mind map, using drawings, symbols, and key terms to visually represent their ideas. Encourage creativity and the use of colors.
  5. Groups present their section of the mind map to the class and explain their visual choices and how they relate to the central concept.
* **Assessment**:
  1. Each group will be assessed on the organization, creativity, and clarity of their mind map section. Participation in the presentation is also evaluated.

**Day 4: My Life as… (Talking Drawing)**

**Objective**: Encourage personal reflection by having students create a drawing that represents their life through an engineering lens.

* **Materials**: Drawing paper, colored pencils, markers
* **Activity**:
  1. Introduce the concept of “My Life as…” where students reflect on their own lives and experiences through a creative, engineering-themed lens.
  2. Students create a drawing that metaphorically represents their life as an engineering object or system (e.g., “My Life as a Bridge” or “My Life as a Circuit”).
  3. Underneath the drawing, students write a short dialogue or “speech” for their drawing that explains how their life is like this engineering concept, including their challenges, goals, and personal connections to the field.
  4. Students share their “Talking Drawings” in small groups, explaining the symbolism and meaning behind their work.
* **Assessment**:
  1. Students submit their drawing and written explanation, which will be graded based on creativity, depth of reflection, and connection to engineering.

**Day 5: Check for Understanding Assessment**

**Objective**: Assess students' understanding of key concepts covered during the week, focusing on their ability to apply critical thinking, personal reflection, and creativity.

* **Materials**: Quiz with multiple-choice, short answer, and reflection prompts
* **Activity**:
  1. Administer a short quiz covering concepts from the week:
     + Questions about the engineering problem from the video interview
     + Logical thinking exercises with If/Then scenarios
     + A reflection question on how mind mapping helped organize their thoughts
     + A creative prompt asking students to reflect on the “My Life as” activity and how it helped them connect to engineering concepts.
  2. Review quiz answers as a class to clarify any misunderstandings.
* **Assessment**:
  1. Graded quiz or reflection, assessing comprehension of the week's activities and key concepts.

**Homework and Extended Activities**

* **Day 1**: Students research an engineer and write a reflection on how their career path relates to problem-solving.
* **Day 2**: Create three more If/Then statements for a real-world engineering challenge.
* **Day 3**: Finish the mind map at home or refine the group’s section for presentation.
* **Day 4**: Add more details or creative elements to the “My Life as” drawing.
* **Day 5**: Complete any unfinished quizzes or reflections.