### Assignment 3

#### Due Date: September 09, 2016

**Unit 5 - Week 3**

**Electrostatics**

**Module 5**

**Week 2**

**Week 3**

**Week 4**

**Module 6**

**Week 1**

**Assignment**

**Electrostatic Potential**

1. **Objective:**
   - To understand the concepts of electrostatic potential.
   - To calculate the electrostatic potential at various points.

2. **Background:**
   - Electrostatic potential is a scalar quantity that represents the potential energy per unit charge at a point in an electrostatic field.

3. **Requirements:**
   - Students are expected to:
     - Understand the concept of electrostatic potential.
     - Be able to calculate electrostatic potential at given points.

4. **Assignment:**
   - Calculate the electrostatic potential at various points given the electric field and the charge distribution.

**Instructions:**

- **Step 1:** Identify the electric field and the charge distribution.
- **Step 2:** Use the formula for electrostatic potential: \( V = \frac{1}{4\pi\varepsilon_0} \oint E \cdot dl \). Where \( E \) is the electric field and \( \varepsilon_0 \) is the permittivity of free space.
- **Step 3:** Calculate the potential at the given points.

<table>
<thead>
<tr>
<th>Point</th>
<th>Electrostatic Potential</th>
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<tbody>
<tr>
<td>A</td>
<td>50 V</td>
</tr>
<tr>
<td>B</td>
<td>100 V</td>
</tr>
<tr>
<td>C</td>
<td>150 V</td>
</tr>
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**Submission:**

- **Due Date:** September 09, 2016
- **Format:** Email submission to the instructor.
- **Requirements:**
  - All calculations must be shown.
  - Correct formula usage and unit consistency.

**Grading:**

- **Criteria:**
  - Theoretical understanding:
    - Understanding of electrostatic potential.
  - Calculation accuracy:
    - Correct application of the formula.

**Notes:**

- **Additional Resources:**
  - Textbook chapters on electrostatics.
  - Online resources on electrostatic potential calculations.

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