1. **Course Description**

(3-0) 3 Credits. “This is the first course of a two-semester sequence in electrodynamics. Topics in the sequence include boundary value problems, Maxwell’s equations, multi-pole expansions and gauge transformations. Additional topics will be chosen from such areas as the relativistic formulation of electro-magnetic theory, lagrangian formulations of classical fields, plane and spherical waves, wave guides, multipole radiation, radiation from moving charges, plasma physics, magneto-hydrodynamics, relativistic (synchrotron) radiation, and radiation in collisions and other applications of interest.”

2. **Textbook:** *Classical Electrodynamics, 3rd ed.* by J. D. Jackson

3. **Professor:** Dr. Luke A. Corwin

   Office: EE/Physics 120  
   Office Hours: Wed. 4:30 - 5:30 PM and by appointment  
   Luke.Corwin@sdsmt.edu (605) 394-2728

4. **Class Time & Location**

   Aug. 25 - Dec. 17, Mon., Wed 3:00 - 4:30 PM MT (4:00-5:30 PM CT)  
   SDSM&T Location: Classroom Building (CB) 106  
   USD Location: Old Main, Room 204  
   SDSU Location: SPC 205

5. **Assignments and Evaluation**

<table>
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<tr>
<th>Component</th>
<th>Points</th>
<th>Date</th>
<th>Letter Grades</th>
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<tr>
<td>Midterm Exam</td>
<td>100</td>
<td>Oct. 15</td>
<td>≥ 85% A</td>
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<tr>
<td>Final Exam</td>
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<td>Week of Dec. 11</td>
<td>75 – 85% B</td>
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<td>Homework</td>
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<td>Weekly</td>
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6. **Tentative Schedule of Topics**

   Introduction and Chapter 1: Introduction to Electrostatics  
   Chapter 2: Boundary-Value Problems in Electrostatics I  
   Chapter 3: Boundary-Value Problems in Electrostatics II  
   Chapter 4: Multipoles, Electrostatics of Macroscopic Media, Dielectrics  
   Chapter 5: Magnetostatics, Faradays Law, Quasi-Static Fields  
   Chapter 6: Maxwell Equations, Macroscopic Electromagnetism, Conservation Laws  
   Chapter 7: Plane Electromagnetic Waves and Wave Propagation  
   Chapter 8: Waveguides, Resonant Cavities, and Optical Fibers  
   Chapter 9: Radiating Systems, Multipole Fields and Radiation