

**Phys104 ( General Phys. 2 )**

**COURSE SYLLABUS**

**Text book**

***Physics for Scientists and Engineers  
( 6<sup>th</sup> edition )- R. A. Serway& Jewett***

<b>Chapter &amp; Sections</b>	<b>Sections Contents</b>	<b>Examples</b>	<b>problems</b>
<b>23</b> <b><u>Electric Field</u></b>  <b>3, 4, 6, 7</b>	Coulomb's Law, The Electric Field, Electric Field Lines, and Motion of Charged Particles in a Uniform Electric Field.	1,2, 3, 5, 8, 10, 11	4, 7, 10, 14, 20, 21, 42, 45, 46
<b>24</b> <b><u>Gauss's Law</u></b>  <b>1,2, 3, 4</b>	Electric Flux, Gauss's Law, and Application of Gauss's Law to Various Charge Distributions (Examples: 4,5,6,7,8) and Conductors in Electrostatic Equilibrium.	2, 3, 4, 5, 6, 7, 8	3,4,9,11, 21, 24, 31, 35, 37, 40,42,
<b>25</b> <b><u>Electric Potential</u></b>  <b>1, 2, 3</b>	Potential Difference and Electric Potential, Potential Diff. in a Uniform Electric Field, Electric Potential and Potential Energy Due to point Charges.	1,2, 3	2,3, 6,16,17,20
<b>26</b> <b><u>Capacitance and Dielectrics</u></b>  <b>1, 2, 3, 4, 5</b>	Definition & Calculating of Capacitance, Combinations of Capacitors, Energy Stored in a Charged Capacitor, Dielectrics.	1, 4, 6, 7	1, 7, 9, 18,21, 31,36, 47, 54
<b>27</b> <b><u>Current and Resistance</u></b>  <b>1, 2, 4, 6</b>	Electric Current, Resistance, Resistance and Temperature, Electric Power.	1, 2, 3, 6, 7, 8	1, 11, 12, 15, 16, 22, 32,33, 36, 49, 56

<p><b>28</b> <u>Direct Current Circuits</u> 1, 2, 3</p>	<p>Electromotive Force, Resistors in Series and Parallel, Kirchhoff's Rules, RC Circuits.</p>	<p>1, 4, 6, 8, ,10</p>	<p>2, 6, 8, 9, 15, 20,21, 36, 40</p>
<p><b>29</b> <u>Magnetic Field</u> 1, 2, 4, 5</p>	<p>Magnetic Fields and Forces, Magnetic Force Acting on a Current-Carrying Conductor(Up to equation 29.3), Motion of a Charged Particle in a Uniform Magnetic Field and its Applications (velocity selector)</p>	<p>1, 6, 7</p>	<p>7, 9, 12,14, 30, 37, 41</p>
<p><b>30</b> <u>Sources of the Magnetic Field</u> 1, 2, 3, 4,5, 6</p>	<p>The Biot -Savart Law( Eq.30.5 only and without proof), Magnetic Force Between Two Parallel Conductors, Ampère's Law, Mag. Field of a Solenoid, Magnetic Flux, Gauss's Law in Magnetism.</p>	<p>4, 8</p>	<p>4, 16,17, 31, 35, 63</p>
<p><b>31</b> <u>Faraday's Law</u> 1, 2</p>	<p>Faraday's Law of Induction, Motional emf.</p>	<p>1, 5</p>	<p>2, 5, 13, 20</p>
<p><b>32</b> <u>Inductance</u> 1, 3</p>	<p>Self-Inductance, Energy in a Mag. field .</p>	<p>1, 2</p>	<p>6,7, 9, 16, 29, 30, 31, 37</p>
<p><b>33</b> <u>Alternating Current Circuits AC</u> 1, 2, 3, 4, 5, 6, 7</p>	<p>AC Sources, Resistors – Inductors - Capacitors in an AC circuit, The RLC Series Circuit, Power in an AC Circuit, Resonance in a Series RLC Circuit.</p>	<p>1, 5, 6, 7</p>	<p>3, 10, 17,21,22 26, 32, 33, 37</p>

**Course Evaluation**

<i>Exam</i>	<i>Marks</i>	<i>Date</i>	<i>Notes</i>
1 <sup>st</sup> Midterm			
2 <sup>nd</sup> Midterm			
Lab Exp. Report & Exam			
<b>Final</b>	<b>40</b>		
<b>TOTAL</b>	<b>100</b>		

**Course Coordinator: Prof. Magdy Ghannam**

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