

<b>Course Syllabus</b>	<b>EECS 3460 – Electrical Energy Conversion</b>
<b>Credits &amp; Contact Hours</b>	3 credit hours & three 50-minute lecture contact hours per week.
<b>Instructor's Name</b>	Dr. Ezzatollah Salari
<b>Textbook</b>	P.C. Sen, "Principles of Electric Machines and Power Electronics", 3 <sup>rd</sup> Edition, J. Wiley.
<b>Course Information</b>	<p>This course will familiarize students with various sources and the generation of electric energy in our industrialized society. The course also teaches EE students the analysis and theory of operation of power transformers and electric machines.</p> <p>Pre-requisite: EECS 3710</p> <p>Required course for EE students</p>
<b>Specific Goals - Student Learning Objectives (SLOs)</b>	<p>The student will be able to</p> <ol style="list-style-type: none"> <li>1. Understand the basic properties of magnetic materials and how to analyze magnetic circuits.</li> <li>2. Perform analysis of transformer models and applications.</li> <li>3. Understand fundamental concepts of rotating machines and use of energy and co-energy functions.</li> <li>4. Understand synchronous motors and generator analysis and applications.</li> <li>5. Understand basics of dc motors and generators and applications.</li> <li>6. Understand induction motor analysis and applications, both 3-phase and 1-phase.</li> </ol>
<b>Topics</b>	<ol style="list-style-type: none"> <li>1. Magnetic Circuits</li> <li>2. Hysteresis</li> <li>3. Ideal Transformer</li> <li>4. Practical Transformer</li> <li>5. Energy Conversion Process</li> <li>6. Field Energy</li> <li>7. Mechanical Force in an Electromagnetic System</li> <li>8. Rotating and Cylindrical machines</li> <li>9. DC machines, Generators, Motors</li> <li>10. Synchronous Machines</li> <li>11. Induction (asynchronous) Machines</li> </ol>