



**University of Tehran**  
**School of Electrical and Computer Engineering**

<b>Course:</b>	<b>8101108 – Reliability Evaluation of Electrical Power Systems</b>		
<b>Course type:</b>	<b>Elective</b>	EE*	Credit: 3
<b>Level:</b>	Graduate		
<b>Co-requisite(s):</b>			
<b>Prerequisite(s):</b>	Power System Analysis		
<b>Prerequisite by topic:</b>	Power Flow Studies, Probability and Statistical Studies		
<b>Textbook(s):</b>	<p>[1] R. Billinton, R. N. Allan, <i>Reliability evaluation of power systems</i>, 2nd ed.: Springer, 1996.</p> <p>[2] R. N. Allan, <i>Reliability evaluation of power systems</i>, Springer Science &amp; Business Media, 2013.</p>		
<b>Coordinator:</b>	Moein Moeini-Aghaie		
<b>Goals:</b>	<ol style="list-style-type: none"> <li>1. An introduction with basic principles of reliability studies in power systems</li> <li>2. Introducing different methods of evaluating reliability indices (analytical and simulation approaches)</li> <li>3. Introducing efficient models for different elements of power systems to be used in reliability studies</li> <li>4. Introducing main applications of reliability studies in different sectors of power systems (generation, composite and distribution systems)</li> </ol>		
<b>Outcome:</b>	<ol style="list-style-type: none"> <li>1. Learn the main goals of running reliability studies in power systems</li> <li>2. Learn how to run reliability studies in different sectors of power systems</li> <li>3. Become familiar with main applications of reliability indices in operation and planning studies</li> </ol>		
<b>Topics:</b>	<ol style="list-style-type: none"> <li>1. Overview of probability and statistical measures</li> <li>2. Reliability studies of generation system (HLI)</li> <li>3. Reliability studies of interconnected systems</li> <li>4. Reliability studies of composite systems</li> </ol>		

	<ul style="list-style-type: none"> <li>5. Reliability studies of distribution networks</li> <li>6. Transmission substations in reliability studies of power systems</li> <li>7. Cost-worth analysis in reliability studies</li> <li>8. Monte-Carlo Simulation (MCS) usage in reliability studies</li> </ul>
<b>Computer usage:</b>	MATLAB, DIgSILENT
<b>Assignments:</b>	5 series
<b>Projects:</b>	Simulation project
<b>Grading:</b>	Assignment (10%) Project (20%) Midterm (30%) Final (40%)
<b>Further readings:</b>	[1]
<b>Prepared by:</b>	Moein Moeini-Aghaie
<b>Date:</b>	21 Nov. 2017

\*EE: Electrical Engineering CE: Computer Engineering IT: Information Technology