



| Sample Brief Course Description | |
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| Course title | Electric Machines |
| Course code | ECE 331 |
| College | Engineering |
| Department / Program | Electrical Engineering/ Electronics +Communications +Renewable Engineering |
| Year/ Level | 4/8 |
| Course Type | A. <input type="checkbox"/> University <input type="checkbox"/> College <input checked="" type="checkbox"/> Department <input type="checkbox"/> Program <input type="checkbox"/> Others b. <input checked="" type="checkbox"/> Required <input type="checkbox"/> Elective |
| Credited Hours | 3 credit hours |
| Contact Hours | (LT:3, LB:0 ,TR:0) |
| Pre-requisites (if any) | ECE 211 |
| Co-requisites (if any) | None |
| Course description | Conventional and renewable energy sources and their environmental consequences; overview of power systems structure-generation, transmission, and distribution- and its changing landscape; review of phasors and three-phase electric circuits; fundamental principles in magnetic theory; principle and |



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| | structure of transformers; principles of electromechanical energy conversion; theory and operation of induction machines; synchronous generators and motors; theory and operation of dc motor. |
| Course Main Objectives | <ul style="list-style-type: none"> - understand the basic concepts of generation plants - understand basic concepts of electrical machines and transmission lines - will learn how to operate an electrical machine - learn the details of construction of different types of electrical machines - learn how to analyze the performance and design the components - learn how to perform experimentation with electrical machines |
| Learning Outcomes | <p>Knowledge and Understanding</p> <p>Understand single and three phase AC circuits analysis</p> <p>Match the fundamentals of the working principle of some important power engineering devices such as transformer, DC machine, Induction machine and Synchronous machine</p> <p>Recognize the practical limitations and aspects of the engineering devices such as transformer, DC machine, Induction machine and Synchronous machine</p> <p>Identify and compare the theory of operation of engineering devices</p> |
| | <p>Skills:</p> <p>Evaluate, review literature, analyze, and then design solutions for complex electrical engineering problems</p> <p>Be capable of selecting, and designing these devices for real-life practical experience in the performance and operation of these important power engineering devices.</p> <p>Evaluate the failure of components of the engineering devices</p> |
| | <p>Values:</p> |

References:

- P.C. Sen, “Principles of Electric Machines and Power Electronics “ John Wiley 2016
- Ned Mohan “Electric Machines & drives” John Wiley 2016