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| Date: |  | Version:1/9/2023 | Start: 1/9/2023 |
| **Module Name - Code** | Direct Current Machines - 2101 |
| **Module Language:** | English |
| **Responsible:** | Assistant Prof. Aree Akram Muhammed |
| **Lecture (s):** | Theory : Aree AkramPractical: Aree Akram & Nuraddin TaHA |
| **College:** | College of Engineering – Salahaddin University |
| **Duration:** | 15 week – 1 semester |
| **Course outcomes:** | At the end of the semester, students would be able to understand the principles of operation of electrical machines. The student will get familiar with transformers which have a great part in the practical environment. |
| **Course Content:** | The course consists of two chapters, the first chapter, its focus on Direct machine Generator, how it works , the principles of operation the construction , the winding types , how to make a winding of armature then the types of dc generators and  their characteristics then the armature reaction the reasons and remedy taken to reduce , also the voltage regulation, losses with efficiency and finally the problems. while chapter two is about   Direct machine Motor, how it works , the principles of operation and the construction , the types of DC motors with their characteristics , also the speed control and  braking methods , speed regulation,  efficiency , applications and  finally the problems.. |
| **Literature:** | * Electrical Machines: Theory And Practice by [BANDYOPADHYAY, M. N.](https://www.kopykitab.com/index.php?route=product/search&q=BANDYOPADHYAY%2C+M.+N.) 2020
* DC Machines and Transformers By [K.M. Kumar](http://books.rediff.com/author/k.m.-kumar?sc_cid=www.google.com|author)-2004
 |
| **Type of Teaching:** | 3 hrs in lectures 2 hrs laboratory working (practical). |
| **Pre-requisites:** |  |
| **Frequency:** | Yearly in the fall semester |
| **Requirements for  credit points:** | For the award of credit points which is 7, it is necessary to pass the module exams.The module exams include (practical and theoretical) **Student's attendance is required in all classes**. |
| **Credit point:** | 7 |
| **Grade Distribution:** | The Grade is generated from the examination result(s) with the following Annual efforts 50% = [30 % theory + 20% practical (lab.)] Theory 30 % = 15% Mid-term exam + 13 Quiz (3 times) + 1 assignment20% practical (lab.) = 10% (reports and quiz ) + 10% Mid-term examFinal 50%  =  [40 % theory + 10% practical (lab.)] |
| **Work load:** | The workload is 150 hrs. It is the result of 45 hrs attendance and 105 hrs self-studies. |

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