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| **College :** | **.College of Engineering** |
| **Programme** | **Electrical Engineering** |
| **Course :** | **Power Electronics** |

Feb 2017

**Course Report**

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| --- | --- | --- | --- | --- |
| Institution : | Majmaah University | | Date of CR | 2/6th /2017 |
| College/ Department | | Engineering.......... / ......Electrical Engineering.................... | | |

**A Course Identification and General Information**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1. Course title: | | Power Electronics | | | | | Code | | | EE 374 | | | Section | | | 89-90 | | |
| 2. Name of course instructor | | | | Dr. Youcef Berrouche | | | | | | | Location | | | EE department | | | | |
| 3. Year and semester to which this report applies: | | | | | | | | | | 2016/2017 Semester 1 | | | | | | | | |
| 4. Number of students starting the course? | | | | | | 19 | | Students completing the course? | | | | | | | | | 17 |  |
| 5. Course components: | | | | | | | | | | | | | | | | | | |
|  | Lecture | | Tutorial | | Laboratory/  Studio | | | | Practical | | | Other | | | **Total** | | | |
| **Contact**  **Hours** | 48 | | 16 | | 0 | | | | 0 | | | 0 | | | **64** | | | |
| **Credit** | 3 | | 0 | | 0 | | | | 0 | | | 0 | | | **3** | | | |

**B- Course Delivery :**

**1. Coverage of Planned Program**

|  |  |  |  |
| --- | --- | --- | --- |
| **Topics Covered** | **Planned** Contact Hours | **Actual** Contact Hours | **Reason for Variations (\*)** |
| Contacts with students + overview of the course | 4 | 4 | ………………………………….. |
| Introduction, converters types | 4 | 4 | ………………………………….. |
| Semi-conductor devices | 4 | 4 | ………………………………….. |
| Rectifier: single-phase, half-wave rectifiers | 4 | 4 | ………………………………….. |
| Rectifier: Bi-phase half-wave rectifiers | 4 | 4. | ………………………………….. |
| Single-phase, full-wave controlled rectifiers | 4 | 4 | ………………………………….. |
| Poly-phase rectifiers, Three-Phase star rectifier, six-phase star rectifier | 4 | 8 | ………………………………….. |
| AC voltage controller: introduction, naturally-commutated ac controller | 4 | 4 | ………………………………….. |
| Pure resistive load, inductive load | 4 | 4 | ………………………………….. |
| Forced-commutated ac controller, Pure resistive load, inductive load | 4 | 4 | ………………………………….. |
| DC chopper : introduction, chopper classes | 4 | 4 | ………………………………….. |
| DC chopper with R-L back emf load | 4 | 4 | ………………………………….. |
| Inverter : introduction, single-phase inverter | 4 | 4 | ………………………………….. |
| Three-Phase inverter, pulse width modulation | 4 | 8 | ………………………………….. |

( \* ) if there is a difference of more than 25% of the hours planned

**2. Consequences of Non-Coverage of Topics**

|  |  |  |
| --- | --- | --- |
| Topics not Fully Covered  (if any) | Effected Learning Outcomes | Possible Compensating Action |
| None | None | None |

**3. Course learning outcome assessment.**

| **List course learning outcomes** | | **List methods of assessment for each LO** | **Summary analysis of assessment results for each LO** |
| --- | --- | --- | --- |
| **2.0** | **Cognitive Skills** | | |
| **2.2** | The student will be able to solve engineering problems related to inverters  Solve engineering problems related ac-ac converters and rectifiers  Solve engineering problems related to dc-dc converters and resonant converters | 1st Midterm exam and 2nd Midterm exam, Final exam, Micro projects | 84% and 74% |
| **2.3** | Design ac-ac converters, rectifiers, inverters, dc-dc converters and resonant converters for power system applications. |
| **4.0** | **Communication, Information Technology, Numerical** | | |
| **4.1** | The student will be able to determine the parameters of power semiconductor devices. | 1st Midterm exam and 2nd Midterm exam, Final exam, Micro projects | .78% |

**Summarize any actions you recommend for improving teaching strategies as a result of evaluations in table 3 above.**

|  |
| --- |
| Teaching based on Problem Based Learning (PBL) and high thinking skills is required.More examples to apply knowledge of mathematics are required.More examples about converters design are required. |

**4. Effectiveness of Planned Teaching Strategies for Intended Learning Outcomes set out in the Course Specification**

|  |  |  |  |
| --- | --- | --- | --- |
| List Teaching Methods set out in Course Specification | Were They  Effective? | | Difficulties Experienced (if any) in Using the Strategy and Suggested Action to Deal with Those Difficulties. |
| No | Yes |
| Revision of some principles and rules in trigonometric and integral calculus. |  | Y | There are no difficulties. |
| Introducing power converter by citing applications in power systems and machines drives. |  | Y | Parallel laboratory lecture are required. |

**C. Results**

**1. Distribution of Grades**

|  |  |  |  |
| --- | --- | --- | --- |
| Letter  Grade | Number of  Students | Student  Percentage | Analysis of Distribution of Grades |
| **A+** | 1 | 5% | The distribution of the grades is normal distribution |
| **A** | 1 | 5% | The distribution of the grades is normal distribution |
| **B+** | 0 | 0% | The distribution of the grades is normal distribution |
| **B** | 0 | 0% | The distribution of the grades is normal distribution |
| **C+** | 3 | 16% | The distribution of the grades is normal distribution |
| **C** | 4 | 21% | The distribution of the grades is normal distribution |
| **D+** | 3 | 16% | The distribution of the grades is normal distribution |
| **D** | 5 | 26% | The distribution of the grades is normal distribution |
| **F** | 2 | 11% | The distribution of the grades is normal distribution |
| Denied  Entry | 0 | 0 % |  |
| In Progress | 0 | 0 % |  |
| Incomplete | 0 | 0 % |  |
| Pass | 17 | 89% | The results are within the normal distribution. The pass percentage is good and there is no need for further recommendation or actions. |
| Fail | 2 | 11% |  |
| Withdrawn | 0 | 0% |  |

**2. Analyze special factors (if any) affecting the results**

|  |
| --- |
| * Drawbacks to apply knowledge and skills of mathematics to solve problems related to power converters. * The absence of students during the weeks of first and second midterm exams affect considerably their performances and consequently their results. |

**3. Variations from planned student assessment processes (if any) .**

a. Variations (if any) from planned assessment schedule (see Course Specifications)

|  |  |
| --- | --- |
| Variation | Reason |
| None | …………………………………………… |
| None | …………………………………………… |
| None | …………………………………………… |

b. Variations (if any) from planned assessment processes in Domains of Learning

|  |  |
| --- | --- |
| Variation | Reason |
| None | …………………………………………… |
| None | …………………………………………… |
| None | …………………………………………… |

**4. Student Grade Achievement Verification:**

|  |  |
| --- | --- |
| Method(s) of Verification | Conclusion |
| All final papers are reviewed by independent reviewer from the department who will double check the sum of the total marks | Level of fairness in correction is fairly high |
| Grades are approved by Head of department and the dean of the Engineering College. | Grades approved by Head of department and the dean of the Engineering College |

**D. Resources and Facilities**

|  |  |
| --- | --- |
| Difficulties in access to resources  or facilities (if any) | Consequences of any difficulties experienced for student learning in the course |
| The classroom was not equipped with operated smart board. | The learning process was not completely effective. |
| The required textbook (Hard copy) is not available in the university library. | None (Softcopy available) |

**E. Administrative Issues**

|  |  |
| --- | --- |
| Organizational or administrative difficulties encountered (if any) | Consequences of any difficulties experienced for student learning in the course |
| None | None |
| None | None |
| None | None |

**F Course Evaluation**

1. **Student evaluation of the course (Attach summary of survey results)**

|  |
| --- |
| All the results scores are more than 3. No actions will be token |
| NA |

**2. Other Evaluation :**

|  |
| --- |
| NA |
| NA |

**G Planning for Improvement**

**1. Progress on actions proposed for improving the course in previous course reports (if any).**

|  |  |  |  |
| --- | --- | --- | --- |
| Actions recommended  from the most recent course report(s) | Actions Taken | Action Results | Action Analysis |
| 1. Textbook not available. | None | None |  |
|  |  |  |  |

**2. List what other actions have been taken to improve the course**

|  |
| --- |
| None |

**3. Action Plan for Next Semester/Year**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Actions Recommended for Further Improvement | Intended Action Points  (should be measurable) | Start  Date | Completion  Date | Person Responsible |
| Hard copies of Textbook | At least 10 hard copies of textbook | 06/02/2017 | 30/06/2017 | UPC |
| Interactive teaching methods | The instructor will use case study and group discussion | 01/01/2017 | 30/06/2017 | The instructor |

**Course Instructor:**

|  |  |  |  |
| --- | --- | --- | --- |
| Name: | Youcef berrouche | | |
| Signature: | ............................. | Date Report Completed: | 06th /02/2017 |

**Program Coordinator:**

|  |  |  |  |
| --- | --- | --- | --- |
| Name: | ................................ | | |
| Signature: | ............................. | Date Received : | ....../…../…… |

**Important Notes :**

* A separate Course Report (CR) should be submitted for every course and for each ( section " Male & Female" or Academic Programme or campus location where the course is taught ) even if the course is taught by the same person
* Each CR is to be completed by the course instructor (Separate reports attached ) and given to the program coordinator At the end of each course
* Course Reports are to discuss by the academic ( Programme ) Department Council