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| **College:** | **Engineering** |
| **Program:** | **Electrical Engineering** |
| **Course:** | **Automatic Control Systems** |

**Course Report**

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| --- | --- | --- | --- | --- |
| Institution: | Majmaah University | | Date of CR | 17/05/2017 |
| College/ Department | | Engineering / Electrical Engineering | | |

**A Course Identification and General Information**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1. Course title: | | Automatic Control Systems | | | | | Code | | | EE 341 | | | Section | | | 428 | | |
| 2. Name of course instructor | | | | Dr. Abdullah Al-Ahmadi | | | | | | | Location: | | | Al-Yehia Building | | | | |
| 3. Year and semester to which this report applies: | | | | | | | | | | 2016/2017/Semester (1) | | | | | | | | |
| 4. Number of students starting the course? | | | | | | 13 | | Students completing the course? | | | | | | | | | 9 |  |
| 5. Course components: | | | | | | | | | | | | | | | | | | |
|  | Lecture | | Tutorial | | Laboratory/  Studio | | | | Practical | | | Other | | | **Total** | | | |
| **Contact**  **Hours** | 45 | | 15 | | ……….. | | | | ……….. | | | ……….. | | | **60** | | | |
| **Credit** | 3 | | 0 | | ……….. | | | | ……….. | | | ……….. | | | **3** | | | |

**B- Course Delivery:**

**1. Coverage of Planned Program**

|  |  |  |  |
| --- | --- | --- | --- |
| **Topics Covered** | **Planned** Contact Hours | **Actual** Contact Hours | **Reason for Variations (\*)** |
| Control Systems- Closed-Loop Control versus Open-Loop Control, Modeling of Dynamic Systems: Transfer Function and Impulse Response Function | 12 | 12 | ………………………………….. |
| Modeling of Mechanical and Electrical, Fluid and Thermal Systems | 4 | 4 | ………………………………….. |
| Signal Flow Graphs | 8 | 8 | ………………………………….. |
| Transient and Steady-State Response Analyses: First, Second and Higher-Order Systems | 8 | 8 | ………………………………….. |
| Routh's Stability Criterion | 8 | 4 | ………………………………….. |
| Root-Locus Analysis: Root-Locus Plots-Positive-Feedback Systems- Conditionally Stable Systems- Control Systems Design by the Root-Locus Method | 8 | 4 | Due to Ministry of Education instructions, the semester had to be shortened by 3 weeks |
| Frequency-Response Analysis: Bode Diagrams- Polar Plots, Nyquist Stability Criterion- Stability Analysis- Closed-Loop Frequency Response | 8 | 0 |
| Control Systems Design by Frequency Response: Lead Compensation- Lag Compensation- Lag-Lead Compensation | 8 | 0 |

( \* ) 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 |
| Frequency-Response Analysis: Bode Diagrams- Polar Plots, Nyquist Stability Criterion- Stability Analysis- Closed-Loop Frequency Response |  | These parts will be covered in EE 343 |
| Control Systems Design by Frequency Response: Lead Compensation- Lag Compensation- Lag-Lead Compensation |  |

**3. Course learning outcome assessment.**

| **List course learning outcomes** | | **List methods of assessment for each LO** | **Summary analysis of assessment results for each LO** |
| --- | --- | --- | --- |
| **1.0** | **Knowledge** | | |
| **1.1** | **.....................................................................** | .................. | .................. |
| **2.0** | **Cognitive Skills** | | |
| **2.1** | **Use models of physical systems in forms suitable for use in the analysis and design of control systems** | Final Exam | SLO (c) = 75%  SLO (e) = 63.88% |
| **2.2** | **Determine the time and frequency-domain responses of first and second-order systems.** |
| **2.3** | **Determine the stability of control system** |
|  | **Apply root-locus technique to analyze and design control systems.** |
| **3.0** | Interpersonal Skills & Responsibility | | |
| **3.1** |  |  |  |
| **4.0** | **Communication, Information Technology, Numerical** | | |
| **4.1** | **Demonstrate the fundamentals of feedback control systems.** | Final Exam | 75% |
|  | **Solve system equations in state-variable form** |
|  | **Determine the time and frequency-domain responses of first and second-order systems.** |
|  | **Determine the stability of control system** |
|  | **Apply root-locus technique to analyze and design control systems.** |
| **5.0** | **Psychomotor** | | |
| **5.1** | **.....................................................................** | .................. | .................. |

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

|  |
| --- |
| * Some students in Microprojects did not really benefited from it. They only paid a certain amount of money and eventually require the same grade as the fully participated students in the same group. I recommend for each student to do a separate project by himself. * This course requires a lot of teaching aids in particular some animations. The students had a tough time coping with the amount of theory without be able to visualize the systems. |

**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 |
| Regular lectures |  | Y | ……………..…………………………. |
| Recitation oral questions by teacher answered orally by students |  | Y | ……………..…………………………. |
| Student-group reports by committees from the class | N |  | The assessment of this teaching method did not reflect the real results since most of students depends on other to do the report. |

**C. Results**

**1. Distribution of Grades**

|  |  |  |  |
| --- | --- | --- | --- |
| Letter  Grade | Number of  Students | Student  Percentage | Analysis of Distribution of Grades |
| **A+** | 1 | 8.33% | * The grades distribution is in the normal range. |
| **A** | 1 | 8.33% |
| **B+** | 1 | 8.33% |
| **B** | 2 | 16.66% |
| **C+** | 0 | 0 |
| **C** | 0 | 0 |
| **D+** | 0 | 0 |
| **D** | 4 | 33.33% |
| **F** | 3 | 25% |
| Denied  Entry | 1 | 8.33% | ……………………………………………………….. |
| In Progress | 0 | 0 | ……………………………………………………….. |
| Incomplete | 0 | 0 | ……………………………………………………….. |
| Pass | 9 | 75% | ……………………………………………………….. |
| Fail | 3 | 25% | ……………………………………………………….. |
| Withdrawn | 0 | 0 | ……………………………………………………….. |

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

|  |
| --- |
| * Some students did not attend midterm exams and quizzes which in turn effected the overall results of this section. |

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

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

|  |  |
| --- | --- |
| Variation | Reason |
| First midterm exam on week 8 | The students were busy in week 7. Therefore, the postponement of the midterm exam was required. |
| No second midterm exam | Due to instructions from the ministry of education |

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

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

**4. Student Grade Achievement Verification:**

|  |  |
| --- | --- |
| Method(s) of Verification | Conclusion |
| The students’ grades were verified by another instructor | No comments |
| The grades distribution was approved by the HoD and the college’s dean | …………………………………………… |

**D. Resources and Facilities**

|  |  |
| --- | --- |
| Difficulties in access to resources  or facilities (if any) | Consequences of any difficulties experienced for student learning in the course |
| Simulation software is not available | Difficulties understanding and solving some sections in the course. |
| Some classrooms had an outdated or damaged resources (Projectors – Air Cons.) | Uncomfortable environment during the class. |

**E. Administrative Issues**

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

**F. Course Evaluation**

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

|  |
| --- |
| a. List the most important recommendations for improvement and strengths   * All scores were above 3 out of 5: |
| b. Response of instructor or course team to this evaluation   * No Action Needed |

**2. Other Evaluation:**

|  |
| --- |
| a. List the most important recommendations for improvement and strengths |
| b. Response of instructor or course team to this evaluation: |

**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. Change course description | Department Council approval | Beginning of Semester 1 | End of Semester 1 |
| 1. Assign weight for each CLO | Department Council approval | Beginning of Semester 1 | End of Semester 1 |
| 1. Assign ULOs | Department Council approval | Beginning of Semester 1 | End of Semester 1 |
| 1. Change the official textbook | Department Council approval | Beginning of Semester 1 | End of Semester 1 |
| 1. Change the references | Department Council approval | Beginning of Semester 1 | End of Semester 1 |
| 1. Change course description | Department Council approval | Beginning of Semester 1 | End of Semester 1 |
| 1. Assign weight for each CLO | Department Council approval | Beginning of Semester 1 | End of Semester 1 |

**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 |
| 1. Change course description | Department Council approval | Beginning of Semester 1 | End of Semester 2 | UPC |
| 1. Assign weight for each CLO | Department Council approval | Beginning of Semester 1 | End of Semester 2 | UPC |
| 1. Assign ULOs | Department Council approval | Beginning of Semester 1 | End of Semester 2 | UPC |
| 1. Change the official textbook | Department Council approval | Beginning of Semester 1 | End of Semester 2 | UPC |
| 1. Change the references | Department Council approval | Beginning of Semester 1 | End of Semester 2 | UPC |

**Course Instructor:**

|  |  |  |  |
| --- | --- | --- | --- |
| Name: | Dr. Abdullah Al-Ahmadi | | |
| Signature: | ............................. | Date Report Completed: | May 17, 2017 |

**Program Coordinator:**

|  |  |  |  |
| --- | --- | --- | --- |
| Name: | Dr. Abdullah Almohaisen | | |
| Signature: | ............................. | Date Received: | ....../…../2017 |

**Important Notes:**

* A separate Course Report (CR) should be submitted for every course and for each (section " Male & Female" or Academic Program 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 (Program) Department Council