The University of Jordan
School of Engineering
Department of Mechatronics Engineering
2nd Semester – A.Y. 2015/2016

Course:	Selected Topics in Mechatronics, – 0908589 (3 Cr. – Elective Course)
Instructor:	Dr. Lutfi Al Sharif *Office:* Mechatronics Engineering Department, *Telephone:* 5355000 ext 23025, *Email*: lal-sharif@theiet.org
Course Website:	http://eacademic.ju.edu.jo/l.sharif/Material/Forms/AllItems.aspx
Catalog Data:	This course introduces the students to the elevator traffic analysis and design area. Students will be able to deal with different types of traffic and to use modern evaluation parameters in assessing traffic performance (e.g., waiting time and travelling time). They will also be able to carry out advanced design taking into consideration the type of control system (e.g., destination control system). They will also be able to deal with high rise buildings in terms of the zoning of the different groups of elevators.
Prerequisites by Course:	• 0903201 Computer Applications
Prerequisites By Topic:	The student should have the basic knowledge of programming and the use of Matlab.
Textbook:	• Videos on my You Tube playlist (Mechatronics System Design). • Notes and slides on the my JU webspace.
References:	• Elevator Traffic Handbook: Theory & Practice, 2nd edition, Gina Barney.
Schedule & Duration:	16 Weeks, 30 lectures (50 minutes each) plus exams.
Minimum Student Material:	Textbook, class handouts, scientific calculator, and an access to a personal computer.
Minimum College Facilities:	Classroom with whiteboard and projection display facilities, library, computational facilities with MATLAB and other engineering programs.
Course Objectives:	The course provides the student with general overview of mechatronic systems, their main components and the approach to the design process. An important aim of the course is to allow the student to integrate his/her knowledge of measurement systems, control, electronics, programming and mechanics into designing comprehensive mechatronic systems. The practical assignments and the project work prepare the student for the final year graduation project, by enhancing planning and team work skills as well as practical project work and the building of prototypes.

Course Learning Outcomes and Relation to ABET Student Outcomes:

Upon successful completion of this course, a student should:

1. Be able to carry out the traffic analysis under different modes and mixtures of traffic. (a, c, k)
2. Be able to use the Monte Carlo Simulation method in designing the elevator traffic systems. (a, c, k)
3. Use the modern assessment parameters such as travelling time and waiting time. (c, h)
4. Understand the design methodology of elevator systems for high-rise-buildings. (c, k)

5. Be able to zone buildings in order to limit the number of elevators in a group and to limit the (a, c)

travelling time.

6. Understand the principle of operation of double decker elevators and their design methodologies. (c, k)
7 Design elevator traffic systems for special types of buildings such as hospitals and hotels. (c, k)
8 Carry out a project in the area of elevator traffic engineering (g, d, e)

Course Topics:

Topic Description	Hrs
1. The classical Design Method.	6
2. Unequal floor Populations and the effect of basements.	3
3. Elevator Kinematics.	3
4. Design using calculation.	6
5. Design using Simulation.	6
6. Group Control.	3
7. Residential and Hotel Buildings.	3
8. Hospitals.	3
9. High Rise Buildings.	3
10. Double Decker Elevators.	3
11. Surveys.	3

Ground Rules: **Attendance is required** and highly encouraged. To that end, attendance will be taken every lecture; Absence of more than *7 hours* will result in the expulsion of the student from the course.

Assessments: Exams, Quizzes, Projects, and Assignments.

Grading policy:

Project	**20%**
Midterm Exam	**30 %**
Final Exam written	**30 %**
Final Exam computerised	**20%**
Total	**100%**

Last Updated: Feb. 2016