Instructor Name :	A.Prof.Mohsen S.Soliman													
Program(s) that offer the course :	Mechanical Power Engineering													
	Competencies for Engineering Graduates										Competencies for Engineering Specializations (MECHNICAL ENGINEERING)			
Course ILOs On successful completion of the course, students will be able to	1-Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.	. 2-Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	3-Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical & other aspects as appropriate to the discipline & within the principles & contexts of sustainable design & development.	4-Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.	5-Practice research techniques and methods of investigation as an inherent part of learning.	6-Plan, supervise and monitor implementation of engineering projects.	7- Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams.	8. Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.	9. Use creative, innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.	10. Appreciate the ongoing need to acquire and apply new knowledge and to practice self, lifelong and other learning strategies.	**2.1 Model, analyze and design physical systems applicable to the specific discipline by applying the concepts of: Thermodynamics, Heat Transfer, Fluid Mechanics, solid Mechanics, Material Processing, Material Properties, Measurements, Instrumentation, Control Theory and Systems, Mechanical Design and Analysis, Dynamics and Vibrations.**	**2.2 Plan, manage and carry out designs of mechanical systems and machine elements using appropriate materials both traditional means and computer-aided tools and software contemporary to the mechanical engineering field.**	**2.3 Select conventional mechanical equipment according to the required performance.**	**2.4 Adopt suitable national and international standards and codes; and integrate legal, economic and financial aspects to: design, build, operate, inspect and maintain mechanical equipment and systems.**
1 Recognize and identify different types and applications of practical automatic control systems and control loops.	1	1	1		1						1			
2 Comprehend and follow present and future developments of Hardware and Software Computer Applications in automatic Control Systems.	1	1	1				1		1		1			
3 Recognize various types and applications of Virtual Lab Techniques to study automatic control systems.	1			1			1					1		
4 Apply educational& practical training Virtual Lab to understand basics and essentials of Hydraulic and Pneumatic Systems.			1			1				1			1	
5 Understand basic concepts and definitions of Hydraulic and Pneumatic Systems.			1	1										1
6 Investigate various components, essential parts and accessories of Hydraulic and Pneumatic Circuits.	1	1					1	1					1	
7 Understand hydraulic symbols and schematics used for drawing hydraulic and Pneumatic circuits.	1		1	1					1					1
8 Apply standards and practice reading symbol-schematics of hydraulic and Pneumatic circuits.						1		1	1				1	
9 Perform Evaluation and function analysis to select proper parts for circuits with optimum performance.				1			1			1		1		
10 Examine of Maintenance and Troubleshooting of Hydraulic and Pneumatic Systems.			1						1					1
11 Exchange knowledge with engineering community.					1		1	1			1			
12 Work in stressful environment and within constraints.		1		1					1				1	
13 Communicate effectively, Effectively manage tasks and resources, Refer to relevant literature	1		1		1				1		1			