

| Cairo University, Faculty of Engineering | | | | | | | | | | | | | | | |
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| Mapping Course ILOs to NARS | | | | | | | | | | | | | | | |
| Course Title : | | Application of Virtual Labs in Mechanical Power systems | | | | | | | | | | | | | |
| Course Code : | | MEP 4006 | | | | | | | | | | | | | |
| Instructor Name : | | A.Prof.Mohsen S.Soliman | | | | | | | | | | | | | |
| Program(s) that offer the course : | | Mechanical Power Engineering | | | | | | | | | | | | | |
| | | Competencies for Engineering Graduates | | | | | | | | Competencies for Engineering Specializations (MECHANICAL 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 various types and applications of Computer Virtual Lab Techniques to study automatic control systems | | | | 1 | | | | | | 1 | | 1 | | |
| 2 | Comprehend and follow recent developments of both Hardware and Software of IT & recent modern Virtual Lab Computer Applications in practical automatic control systems. | | | | 1 | | | | | | 1 | | 1 | | |
| 3 | Apply educational-practical training Virtual Lab to understand basics and essentials of GT Systems. | | | | 1 | | | | | | 1 | | 1 | | |
| 4 | Identify various types and main essential parts of Industrial Gas Turbine Systems. | | | | | | | | | | 1 | | 1 | 1 | |
| 5 | Study different methods for emission/pollution control and energy rationalization and maximization of the benefits of Industrial GT Plants. | | | | | | | | | | 1 | | | 1 | |
| 6 | Recognize different types and applications of practical GT automatic control systems and subsystems. | | | | | | | | | | 1 | | | 1 | |
| 7 | Understand various schematics & symbols of GT Hydraulic/Pneumatic control subsystems & circuits. | | | | | | | | | | | | | 1 | |
| 8 | Apply engineering standards and practice reading symbol-schematics of GT vibration control systems. | | | | | | | | | | | | 1 | 1 | 1 |
| 9 | Perform Evaluation and function analysis to select proper GT control systems with optimum performance. | | | | | | | | | | | | 1 | | 1 |
| 10 | Examine of Maintenance and Troubleshooting of GT automatic control systems and subsystems. | | | | | | | | | | | | 1 | | 1 |
| 11 | Exchange knowledge with engineering community. | | | | | | | | | 1 | | | | | |
| 12 | Work in stressful environment and within constraints. | | | | | | | | | 1 | | 1 | | | |
| 13 | Communicate effectively, Effectively manage tasks and resources, Refer to relevant literature | | | | | | | | | | | 1 | | | |