


Sub.	Course Description – توصيف مقرر دراسي	الموضوع	 كليات المعرفة ALMAAREFA COLLEGES
Date		التاريخ	

Course Code & No	ME 301		رقم المقرر ورمزه
Course Name	Thermo-fluid principles		اسم المقرر
Credit Hours	3 (3+1+ 0)		عدد الساعات المعتمدة
Pre-requisite	PHYS 102		المتطلب السابق

General Description	توصيف عام
<p>First and second law of thermodynamics. Properties of ideal gases and vapor. Air standard cycles, vapor power and reversed cycles. Heat Transfer modes (conduction, convection, and radiation). Basics of fluid mechanics. Laminar and turbulent flow. Bernoulli's principle and application. Fluid properties, fluid statics, similitude and dimensional analysis. Dynamics of ideal and viscous flows.</p>	

Course Objectives	أهداف المقرر
<p>To gain basic knowledge of thermo-fluid principles and its applications. This includes the first and second law of thermodynamics, heat Transfer modes, basics of fluid mechanics and properties, similitude and dimensional analysis, and dynamics of ideal and viscous flows.</p> <p>By the end of the course, each student should be able to</p> <ul style="list-style-type: none"> • Familiarize the student with the fundamentals of thermo-fluid significance, and their diverse applications. • Understand the thermodynamic laws and heat transfer modes and its use in industrial application. • Understand the fluid fundamentals and its use in industrial application. • Apply the thermos-fluid fundamental in industry 	

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Course Outlines	مفردات المقرر
<ul style="list-style-type: none"> • Introduction to thermo-fluid science and its importance in industry. • First and second law of thermodynamics • Properties of ideal gases and vapor. Air standard cycles, vapor power and reversed cycles. • Heat Transfer modes (conduction, convection, and radiation.) • Basics of fluid mechanics. Laminar and turbulent flow. Bernoulli's principle and application. • Fluid properties, fluid statics, • similitude and dimensional analysis • Dynamics of ideal and viscous flows 	

References	المراجع
<p>Required Textbooks Engineering Thermofluids, Massoud, Mahmoud, the latest edition, ISBN: 978-3-540-22292-7 (Print) 978-3-540-27280-9 (Online), Publisher: Springer-Verlag Berlin Heidelberg</p> <p>Essential References Materials Thermal-Fluid Sciences: An Integrated Approach, Stephen Turns; ASIN: B01FEKORV8, Publisher: Cambridge University Press, Latest edition</p>	